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The Postwar Rise in the Velocity of Money: A Sectoral Analysis
Richard T. Selden

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The Implications of the Capital Gains Tax for Investment Decisions
Charles C. Holt and John P. Shelton

Commodity Taxation and Equity
David G. Davies

Abstracts of Doctoral Dissertations

Book Reviews

Books Received

Index to Volume XVI

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The Journal of FINANCE

Vol. XVI CONTENTS *for* DECEMBER 1961 *No. 4*

ARTICLES

THE POSTWAR RISE IN THE VELOCITY OF MONEY: A SECTORAL ANALYSIS 483
RICHARD T. SELDEN

MONETARY POLICY AND THE FORWARD EXCHANGE MARKET 546
JOHN H. AUTEN

THE IMPLICATIONS OF THE CAPITAL GAINS TAX FOR INVESTMENT DECISIONS 559
CHARLES C. HOLT and JOHN P. SHELTON

COMMODITY TAXATION AND EQUITY 581
DAVID G. DAVIES

ABSTRACTS OF DOCTORAL DISSERTATIONS

REDISTRIBUTION OF GOLD RESERVES BETWEEN FEDERAL RESERVE BANKS 591
DAVID B. MCCALMONT

THE FINANCIAL DEVELOPMENT OF JAPAN, 1878–1958 . . 593
DAVID J. OTT

THE DEMAND FOR AND THE SUPPLY OF NON-FARM RESIDENTIAL MORTGAGE FUNDS, 1960–70 595
DONALD H. SAUER

BOOK REVIEWS

BUSINESS FINANCE
Richard W. Hooley, *Financing the Natural Gas Industry*
RAYMOND E. HENGREN 597
Geoffrey H. Moore (ed.), *Business Cycle Indicators* ELMER C. BRATT 598

[Contents continued on following page]

INSURANCE

P. G. M. Dickson, *The Sun Insurance Office, 1710–1960* HELEN C. POTTER 599

Mortimer Spiegelman, *Ensuring Medical Care for the Aged* MARY VIRGINIA BROWN 600

INTERNATIONAL FINANCE

Elisabeth A. Owens, *The Foreign Tax Credit* . ERVIN K. ZINGLER 601

Sidney A. Sheperd, *Foreign Exchange in Canada: An Outline* MONA E. DINGLE 602

Tax Institute Symposium, *Taxation and Operations Abroad* FRANK GRANER 603

MONEY AND BANKING

Joseph Aschheim, *Techniques of Monetary Control* ARTHUR KEMP 604

Hermann Bartels, *Die Goldmärkte der Welt seit Verlassen des Goldstandards* . . . . . G. C. WIEGAND 605

Renato Guadagnini, *Il Mercato del denaro di New York* CARLO MARIA FLUMIANI 607

S. N. Sen, *Central Banking in Undeveloped Money Markets* A. MORGNER 607

Marcel Suchestow, *The Changed Structure: A Different Picture of the Monetary Economy* . . . . . LOUIS M. SPADARO 608

Thomas Wilson, *Inflation* . . . . . FREDERICK A. BRADFORD 609

PUBLIC FINANCE

W. W. Brudno, C. K. Cobb, Jr., and N. A. Palkhivala, with the aid of R. M. Eigner and L. D. Hollman, *Taxation in India* RICHARD GOODE 610

James M. Buchanan, *The Public Finances: An Introductory Textbook* ROLAND I. ROBINSON 611

Conference of the Universities–National Bureau Committee for Economic Research, *Public Finance: Needs, Sources, and Utilization* W. BAYARD TAYLOR 612

Morris A. Copeland, *Trends in Government Financing* EARL R. ROLPH 613

C. Harry Kahn, *Personal Deductions in the Federal Income Tax* RICHARD GOODE 615

Lore Kullmer, *Die Ehegattenbesteuerung* . . ERICH A. HELFERT 616

A. H. Marshall, *Financial Administration in Local Government* JANET L. WESTON 617

Earl R. Rolph and George F. Break, *Public Finance* ERWIN ESSER NEMMERS 618

Philip E. Taylor, *The Economics of Public Finance* HELEN J. COOKE 619

John A. Vieg *et al.*, *California Local Finance* . HOMER H. HAMNER 620

REAL ESTATE FINANCE

J. W. Dyckman and R. R. Isaacs, assisted by P. R. Senn, *Capital Requirements for Urban Development and Renewal* H. E. HOAGLAND 621

BOOKS RECEIVED . . . . . JAMES GILLIES 623

INDEX TO VOLUME XVI

ABOUT OUR AUTHORS

RICHARD T. SELDEN is associate professor of banking in the Graduate School of Business at Columbia University and a member of the research staff of the National Bureau of Economic Research, where he is currently working on problems in the areas of consumer credit and the flow of funds. He is the author of a number of studies on monetary matters.

CHARLES C. HOLT holds degrees in both electrical engineering and economics and is professor of economics at the University of Wisconsin. He was formerly on the faculty of the Carnegie Institute of Technology. He is currently working on the problem of economic stability.

JOHN P. SHELTON is visiting associate professor in the Graduate School of Business Administration of U.C.L.A. He is co-author of *California Local Finance* and has contributed articles to the *National Tax Journal* and the *American Economic Review*.

DAVID GEORGE DAVIES is associate professor of economics at Duke University and was formerly on the economics faculty of the University of Cincinnati. His articles have appeared in *American Economic Review, Journal of Political Economy, American Journal of Economics*, and *Sociology*. He is at present investigating the sensitivity of state taxes to fluctuations in aggregate state income.

JOHN H. AUTEN, who holds a Ph.D. degree from the Massachusetts Institute of Technology, is an associate professor of economics at Rice University. He is a frequent contributor to the financial press.

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COMMODORE HOTEL
NEW YORK, NEW YORK

DECEMBER 27–29, 1961

WEDNESDAY, DECEMBER 27

9:30 A.M. Accumulation through Equities for Pensions

Chairman: GEORGE T. CONKLIN, Senior Vice-President, Guardian Life Insurance Company of America

Papers:
"Accumulations by Individuals—Variable Annuities and Others"
WILLIAM FREUND, New York University
"Accumulations by Groups"
WILLIAM M. ANDERSON, C.B.E., F.F.A., F.S.A., President, North American Life Insurance Company of Toronto
"The Investment Aspects of Accumulation through Equities"
BENJAMIN GRAHAM

Discussants: JOHN LINTNER, Harvard University
ELI SHAPIRO, Harvard University

2:30 P.M. The Outlook for the Capital Markets

Chairman: JAMES J. O'LEARY, Director of Economic Research, Life Insurance Association of America

Papers:
"Monetary Policy and the Money Market"
ROY L. REIERSON, Executive Vice-President, Bankers Trust Company
"U.S. Government Bond Market and Debt Management Policy"
RICHARD C. YOUNGDAHL, Executive Vice-President, Aubrey G. Lanston & Co., Inc.
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"Consumer Credit"
GEORGE F. DIMMLER, Economist, CIT Financial Corporation
"Stock Market"
HAROLD X. SCHREDER, Executive Vice-President, Distributors Group, Incorporated

8:00 P.M. Meeting of the Board of Directors

THURSDAY, DECEMBER 28

8:00 A.M. Editorial Board Breakfast Meeting

9:30 A.M. Public Finance in a Growing Economy

Chairman: ROBERT P. MAYO, Vice-President, Continental-Illinois National Bank & Trust Company

Papers: "Some Trends in Post-War Municipal Bond Financing"
JOHN L. O'DONNELL, Michigan State University
"Growth Aspects of Federal Tax Policy"
NORMAN B. TURE, National Bureau of Economic Research
"Government Expenditures and Economic Growth"
OTTO ECKSTEIN, Harvard University

9:30 A.M. Commission on Money and Credit Papers

Chairman: ELI SHAPIRO, Harvard University

Papers: "Public Regulations and Operating Conventions Affecting Sources of Funds of Financial Institutions"
CLIFTON H. KREPS and DAVID T. LAPKIN, University of North Carolina
"Portfolio Regulations and Policies of Financial Intermediaries"
THOMAS G. GIES, University of Michigan
THOMAS MAYER, Michigan State University
"Competition among Financial Institutions"
MARVIN ROZEN, Pennsylvania State University

Discussants: DONALD R. HODGMAN, University of Illinois
DAVID A. ALHADEFF, University of California
HARRY L. BARRETT, Arthur D. Little, Incorporated

12:30 P.M. Joint Luncheon, American Economic Association

Speaker: ROBERT V. ROOSA, Undersecretary of the Treasury

2:30 P.M. Consumer Credit and National Policy

Chairman: ROBERT P. SHAY, National Bureau of Economic Research

Papers: "Costs and Profitability among Consumer Credit Institutions"
PAUL SMITH, University of Pennsylvania

"The Significance of Recent Changes in the Finance Company Paper Market"
RICHARD SELDEN, Columbia University
"A Comparative Analysis of Consumer Credit and Monetary Policy in Great Britain and the United States"
ELLIOT ZUPNICK, City College of New York

Discussants: ROBERT W. JOHNSON, Michigan State University
JAMES C. T. MAO, University of Michigan
PETER FOUSEK, Federal Reserve Bank of New York

5:00 P.M. Annual Business Meeting for All Members of the American Finance Association

5:30 P.M. Meeting of Incoming Board of Directors

FRIDAY, DECEMBER 29

9:30 A.M. New Directions for Real Estate Finance

Chairman: GROVER W. ENSLEY, Executive Vice-President, National Association of Mutual Savings Banks

Papers: "Development of An Effective Secondary Mortgage Market"
OLIVER H. JONES, University of California at Los Angeles, California
"Financing the Rebuilding of Our Cities"
LOUIS WINNICK, Director of Research, Housing and Redevelopment Board, New York, New York
"Public Cost of Urban Renewal"
ROBERT M. FISHER, Economist, Senate Banking and Currency Committee, Washington, D.C.

Discussants: LEON T. KENDALL, Economist, U.S. Savings and Loan League
CHESTER RAPKIN, University of Pennsylvania
FRANK DANIELS, Assistant Commissioner, Federal Housing Administration, Washington, D.C.

2:30 P.M. Econometric Studies in Finance

Joint Session with Econometric Society

Chairman: MERTON H. MILLER, Carnegie Institute of Technology

Papers: "Factors Effecting the Composition of New Financing by Public Utilities"
MORRIS MENDELSON, University of Pennsylvania
"Random versus Systematic Patterns in Stock Price Movements"
PAUL COOTNER, Massachusetts Institute of Technology

"Cyclical Variations of Institutions Supplying Mortgage Credit"
EUGENE BRADY, Iowa State University

Discussants: WILLIAM W. ALBERTS, University of Chicago
ROBERT SOLOMON, Chief, Capital Markets Section, Board of Governors, Federal Reserve System
ARNOLD B. LARSON, Stanford University

(For the convenience of those attending the Meeting who may wish to know, the Visitors' Gallery and Exhibit Hall of the New York Exchange will be open daily from 10:00 A.M. to 3:30 P.M.)

The Journal of FINANCE

Vol. XVI DECEMBER 1961 *No. 4*

THE POSTWAR RISE IN THE VELOCITY OF MONEY
A SECTORAL ANALYSIS*

RICHARD T. SELDEN
Columbia University

I. INTRODUCTION

EXCEPT FOR BRIEF and mild declines during business contractions, the velocity of money in the United States (i.e., the ratio of the volume of expenditures to the stock of money) has increased steadily since the end of World War II. This is true for concepts of money that include and exclude time deposits and for such differing concepts of expenditures as total non-financial payments, debits to demand deposits, and the several variants of national income. Further-

* This is a study by the National Bureau of Economic Research, and has been approved for publication by its board of directors. It will be reprinted in the National Bureau's series of Occasional Papers.

This study was initiated during the 1958–59 academic year, which I spent as research associate at the National Bureau of Economic Research. Although it is not part of any larger research project at the bureau, the study does bear a close relationship to other bureau work, past and present. Sections III–V are devoted mainly to a detailed treatment of business liquidity along the lines of Friedrich Lutz's *Corporate Cash Balances, 1914–43: Manufacturing and Trade* (New York, NBER, 1945). Similarly, the analysis of money flows contained herein represents a somewhat different approach to the problems that Morris Copeland treated in his *A Study of Moneyflows in the United States* (New York: NBER, 1952). And, of course, the velocity estimates from Federal Reserve flow-of-funds accounts would not have been possible without Copeland's innovations in money-flow accounting.

Among current research activities at the National Bureau, this study relates most closely to Milton Friedman's work on the money stock in the United States. However, Friedman is examining the behavior of money over a much longer time span, mainly in terms of aggregative data, while the present study largely ignores the period before 1939 and places major emphasis on sectoral data.

Preliminary findings, which have since been amended in some respects, were presented in hearings before the Joint Economic Committee, May 26, 1959 (*Employment, Growth, and Price Levels, Hearings*, Part IV). I gratefully acknowledge the contributions made to this study by Gary S. Becker, Phillip D. Cagan, Milton Friedman, George Garvy, Anna J. Schwartz, and Martha M. Selden. Thanks are also due to Murray Shields, Willis J. Winn, and Donald B. Woodward, of the National Bureau's board of directors. Joan Tron carefully edited the study, and H. Irving Forman drew the charts. Nancy Byrne ably assisted me by carrying out most of the computations and by offering good advice at many points.

more, it is true for most other prosperous economies as well.[1] By 1957, a measure of one income-velocity concept in the United States —the ratio of annual GNP to total demand deposits plus currency— reached a level not experienced since 1931 (Chart 1).

A persistent peacetime rise in income velocity is unique in American history. Indeed, the trend of the income velocity of total deposits plus currency was clearly downward for several decades prior to World War II.[2] Postwar velocity behavior is all the more puzzling because the major factor thought to be responsible for the earlier downward trend—advancing per capita real income—has continued to operate since the end of the war.[3]

This paper has two objectives: to explain the upward trend in velocity since 1946 and to develop a sectoral approach to velocity analysis. One way to pursue the first goal is to relate velocity to a few measurable variables, such as interest rates, yields on money substitutes, and real income per capita. In a study of the 1919–51 period, I computed relationships of this sort yielding high multiple correlation coefficients.[4] However, these regression equations have performed poorly for later years.

Another approach to understanding velocity movements, generally neglected by monetary theorists,[5] is to analyze velocity by eco-

1. Based on an analysis of GNP/money ratios (computed from various issues of *International Financial Statistics* [International Monetary Fund, Washington, D.C., monthly]) of all countries for which data are available for at least four consecutive years during 1950–58. The postwar trend of velocity has been upward in the following countries: Argentina, Belgium, Brazil, Canada, Ceylon, Denmark, Finland, Iraq, Ireland, Israel, Netherlands, New Zealand, Norway, Paraguay, Sweden, Switzerland, Union of South Africa, United Kingdom, and United States. In two advanced countries—Austria and West Germany—velocity was stable; it declined in France and Italy. Velocity was also stable in fourteen, and declined in ten, relatively underdeveloped economies.

2. However, deposit turnover rose sharply during 1924–29 (see Chart 1). If time deposits are not counted as money, the statement in the text must be modified. On this basis there was no trend in income velocity during 1919–29. What happened before 1919 is an open question, since we cannot adequately separate demand and time deposits much before that date. On the trend of income velocity see my "Monetary Velocity in the United States," in Milton Friedman (ed.), *Studies in the Quantity Theory of Money* (Chicago, 1956), pp. 187–91 and 237.

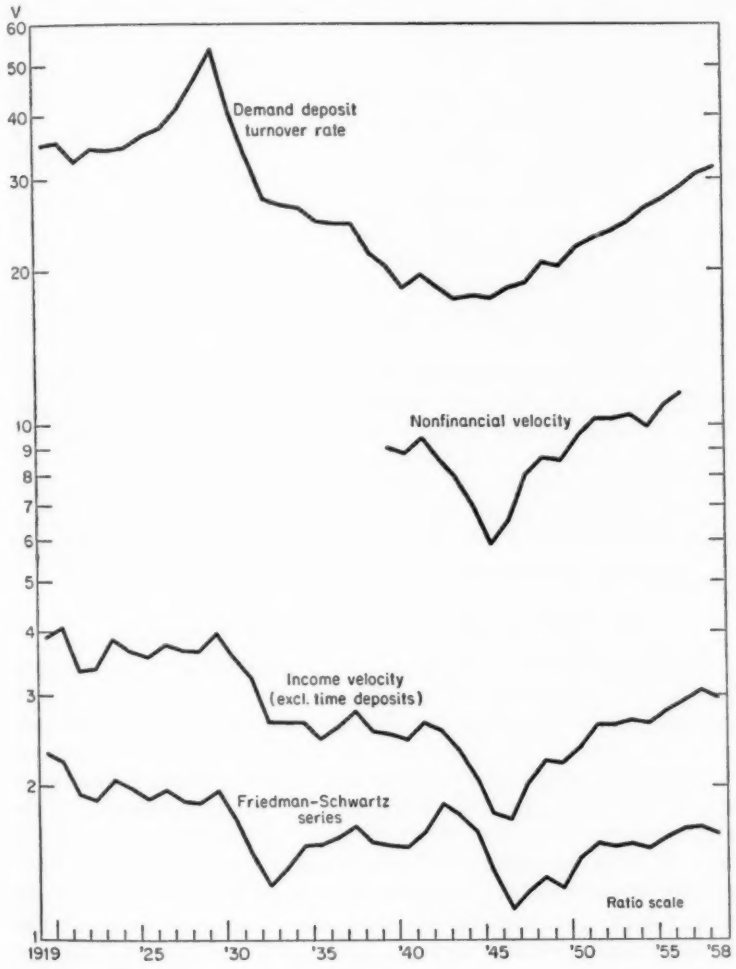
3. Milton Friedman, "The Supply of Money and Changes in Prices and Output," in U.S. Congress, Joint Economic Committee, *The Relationship of Prices to Economic Stability and Growth* (Compendium of Papers Submitted by Panelists, March 31, 1958), pp. 244–45.

4. *Studies in the Quantity Theory of Money*, pp. 214–18.

5. A notable exception is A. G. Hart, *Money, Debt, and Economic Activity* (2d ed.; New York, 1953), pp. 163–65. To my knowledge, the earliest proponent of velocity analysis by sectors was J. M. Keynes in *A Treatise on Money* (New York, 1930), chap. 24. The sector velocity concept has also been discussed by Arthur W. Marget, *The Theory of Prices*, I (New York, 1938), 404–5; George Garvy, "Structural Aspects of Money Velocity," *Quarterly Journal of Economics*, August, 1959, pp. 434 ff.; and others. For additional references see n. 15, below.

CHART 1

FOUR MEASURES OF AGGREGATE MONETARY VELOCITY IN THE UNITED STATES, 1919–58*



* Source: Table A-3.

nomic sectors. Aggregate velocity is a weighted average of millions of payments-money ratios for individual spending units, the weights being the fraction of the total money stock held by each spending unit. Velocity ratios for individual spending units, of course, would be neither feasible to compute nor particularly useful. Velocity can readily be computed for major sectors, however, and these sector velocities can add to our understanding of the behavior of aggregate velocity in several ways. There is no reason to think that the same variables determine velocity for all sectors; the level of real income may be decisive for one, yields on money substitutes for another. Furthermore, attitude changes may be more frequent and marked in some sectors than in others. The effect on aggregate velocity of given changes in circumstances and attitudes may therefore depend on the relative importance of the various sectors. And, of course, mere changes in the weights themselves may very well influence aggregate velocity.

Section II examines changes in aggregate velocity in recent years; Section III, the behavior of a wide variety of sector velocities, particularly since the end of the war; Section IV, the reasons for differences among corporate velocities at any point in time; and Section V, the reasons for the postwar rise in aggregate velocity. Section VI summarizes the results and indicates some of their implications. As we shall see, the sector data developed in Sections III and IV contribute significantly to the broader analysis of Section V.

II. Postwar Changes in Aggregate Velocity

Aggregate monetary velocity is a ratio of spending to money stock for the entire economy. Since there are numerous concepts of both spending and money, there are obviously a great many aggregate velocity concepts as well. These fall into three general classes: deposit turnovers, non-financial velocities, and income velocities. The last is used most widely. For this study, we shall use two measures of income velocity: The first, on which major emphasis is placed, is the ratio of GNP to currency plus demand deposits (including those held by the federal government). So defined, good estimates of income velocity are available for the period from 1919 to date.[6] The second income-velocity measure, developed by Milton Friedman and Anna J. Schwartz, is the ratio of NNP to currency plus total deposits adjusted at commercial banks (excluding those held by the

6. See Chart 1. All velocity data are given in supplementary tables at the end of this study. The income-velocity series appear in Table A-3.

federal government). This measure covers the period 1869 to date.[7] Throughout this study it will be designated the "Friedman-Schwartz income-velocity series"; the term "income velocity" will refer solely to the first measure. The aggregate deposit turnover used in this study is the ratio of debits against demand deposits to the average volume of such deposits during each year, 1919 to date, as computed by the Federal Reserve System. For 1939–56 another aggregate measure—non-financial velocity—can be computed from Federal Reserve flow-of-funds accounts. It is the ratio of total non-financial uses to total demand deposits plus currency. Chart 1 shows these aggregate velocity measures; their average growth rates per year since 1946 are listed in Table 1 (part A).

For the purposes of this study, two important facts emerge from examination of Chart 1 and Table 1 (part A). First, income velocity has been rising fairly steadily since the end of the war at an annual average rate of 4.2 per cent. This is in contrast to the 1920's, when income velocity was essentially stable, and to the period 1929–46, when it declined sharply. The Friedman-Schwartz measure of income velocity has also risen during 1946–58, but at the more modest rate of 2.8 per cent per year. Second, deposit turnover, non-financial velocity, and income velocity have displayed nearly identical trends in the postwar period. This has not always been the case, as reference to the experience of the late 1920's and early 1940's indicates.

The second fact has important implications for an understanding of the first. Some velocity determinants affect income velocity and transactions velocity identically, others differentially.[8] The latter include the degree of vertical integration, the relative importance of barter, and the volume of financial transactions per dollar of income. The postwar rise in income velocity might be rationalized by the

7. For a full description of this income-velocity series see Milton Friedman, *The Demand for Money: Some Theoretical and Empirical Results* (NBER, Occasional Paper No. 68 [1959]), Table 1. The fact that the present study pays scant attention to the Friedman-Schwartz series in no way implies an adverse judgment of this series, either conceptually or otherwise. On the contrary, for the analysis of secular movements in velocity the Friedman-Schwartz series is certainly the most reliable one available. For short-run analysis of the relatively recent past, however, there are many reliable income-velocity series, and the conceptual advantages of one over another are not clear cut. In this study emphasis is placed on comparing aggregate and sector velocity behavior. Since the current Federal Reserve deposit turnover series refer only to demand deposits, it seemed advisable to work primarily with income and non-financial velocities that were similarly defined.

8. For brief discussions of velocity theory see Friedman, "The Supply of Money and Changes in Prices and Output," in *Relationship of Prices to Economic Stability and Growth*, and my article, "Cost-Push versus Demand-Pull Inflation, 1955–57," *Journal of Political Economy*, February, 1959, pp. 7–8.

wave of mergers; in deposit turnover alone, by the increased trading of securities. But the parallelism in the movements of income velocity, deposit turnover, and non-financial velocity means either that these velocity determinants were negligible in the postwar period or that they almost completely offset one another. We can therefore reject all hypotheses that imply differential behavior of velocities.

Of course, there remain a large number of hypotheses to explain the postwar velocity rise. As I shall demonstrate below, however, we can eliminate some of them by means of sector analysis.

TABLE 1

GROWTH RATES OF AGGREGATE AND SECTOR VELOCITIES
SELECTED PERIODS, 1946–58

	Average Growth Rate per Annum* (Per Cent)
A. Aggregate series	
1. Deposit turnover, all sectors	
a) 1946–56	4.7
b) 1946–58	4.8
2. Non-financial velocity, all sectors	
a) 1946–56	4.6
b) 1947–56	3.7
3. Income velocity (time deposits excluded)	
a) 1946–56	4.6
b) 1946–58	4.2
4. Friedman-Schwartz income velocity series	
a) 1946–56	3.2
b) 1946–58	2.8
B. Geographic sectors, deposit turnover	
1. New York City	
a) 1946–56	6.9
b) 1946–58	7.0
2. Six other centers	
a) 1946–56	4.3
b) 1946–58	4.2
3. Other centers	
a) 1946–56	3.8
b) 1946–58	3.9
C. Flow-of-funds sector velocities	
1. Consumer	
a) Including withheld income, 1946–56	5.5
b) Excluding withheld income, 1946–56	4.9
2. Corporate, 1946–56	2.5
3. Non-corporate, 1946–56	5.2
4. Federal	
a) 1946–56	10.4
b) 1947–56	5.4
5. State and local, 1946–56	4.2
6. Insurance, 1946–56	6.3
7. Other investors, 1946–56	2.9

* Average growth rates computed by fitting linear regressions to logarithms of velocities.

III. The Behavior of Sector Velocities

Velocity by Geographic Sectors

From the beginning of the deposit turnover series in 1919, the Federal Reserve System has published separate estimates for New York City, other leading centers, and all other reporting centers.[9] The principal value of this crude three-sector breakdown is that it permits partial isolation of the influence of financial activity and of large corporate accounts. For instance, deposit turnover rose much more in New York than in the other two sectors during the 1920's, because the intense securities speculation of the period generated a particularly large volume of debits against New York checking accounts.[10]

Examination of Chart 2 and Table 1 (part B) reveals a similar phenomenon for the period since World War II. Deposit turnover rose nearly twice as fast in New York as in the "six other centers" and "other centers" during 1946–58. Aggregate deposit turnover rose at a slightly higher rate than turnover in these last two categories, but at a much lower rate than in New York. New York deposit turnover rose even during the war and at about the same rate as it has since 1946, while the turnover in the "other centers" sector fell sharply. Chart 2 illustrates another significant point. New York deposit turnover has been more than twice that of the "other centers" sector since 1954, and about one and two-thirds that of the "six other centers" sector.

These relationships between sector and aggregate changes have been influenced by substantial shifts in weights since 1943 (Table A-4). As mentioned in Section I, weights are the fractions of the total money stock held by each sector.[11] The effect on aggregate de-

9. The estimates for 1919–41 (*Banking and Monetary Statistics*, p. 254) are not entirely comparable with those for 1943 to date. The earlier series include, while the later series exclude, federal government debits and deposits. Furthermore, for 1919–41 "other leading centers" means the 100 cities (other than New York) included in the weekly reporting member-bank series, and the "all other reporting centers" turnover rate is an estimate of demand deposit velocity at *all* other banks. Since 1943 the former has been replaced by a "six other centers" series, and the latter by a "337 other centers" series. See also notes to Table A-3.

10. The behavior of deposit turnover series during this period is discussed in considerable detail in James W. Angell, *The Behavior of Money* (New York, 1936), chap. iv.

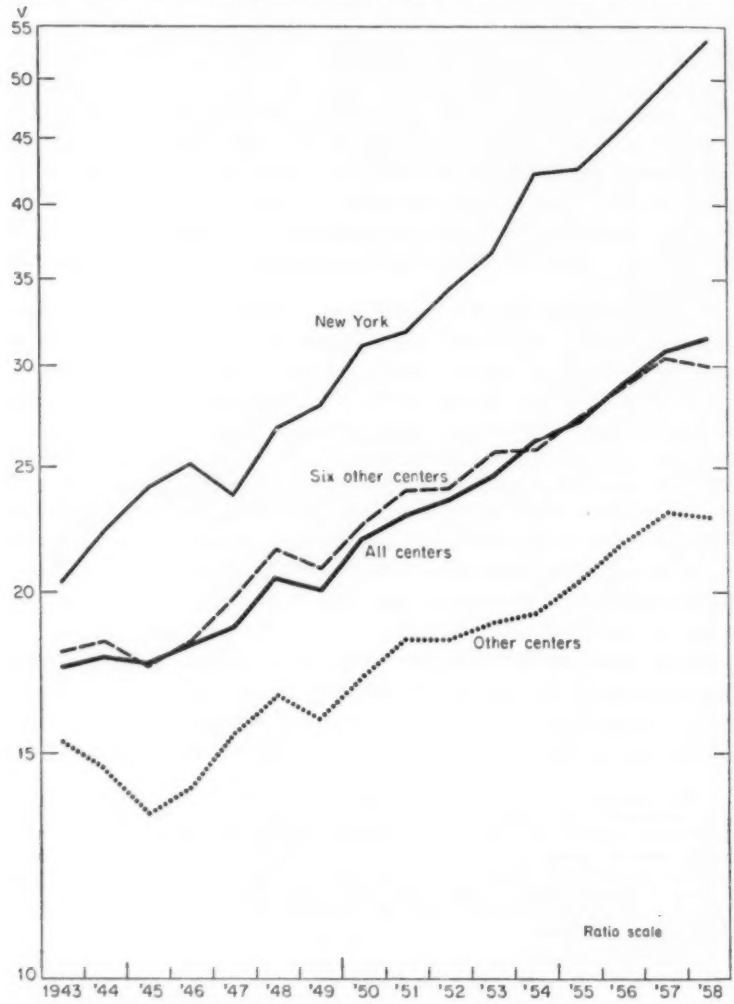
11. This can be demonstrated as follows:

$$V = S/M = s_2/M + s_2/M + \ldots s_n/M^1, \qquad (1)$$

where V is aggregate velocity, S total spending by all sectors, s_i spending by the ith sector, n the number of sectors, and M the total money stock. Multiplying the numerator

CHART 2

DEMAND DEPOSIT TURNOVER RATES, AGGREGATE AND BY GEOGRAPHIC SECTORS, 1943–58*



* Source: Tables A-3 and A-4.

posit turnover of New York's sharp rise in turnover was partly offset by the steady fall in the fraction of bank deposits held in New York. This fall was absorbed mostly by a rise in the fraction held in "other centers." The fraction in the "six other centers," category, which fell slightly during the war, has been virtually constant since 1946. If there had been no shift in weights since 1946, the observed increases in sector turnovers would have raised aggregate turnover to a level 4.8 per cent above its actual 1957 level.

Taken by itself, this geographic breakdown of deposit turnover tells little about the forces responsible for the postwar velocity rise. It does make clear, however, that the rise in turnover has been broadly based, rather than confined to one or two sectors, and that shifts in weights have tended to retard, rather than to intensify, the upward trend. True, deposit turnover rose more rapidly in New York City than elsewhere, but the more general problem remains: Why did velocity rise in *all* sectors?

VELOCITY BY FLOW-OF-FUNDS SECTORS

In 1956 the Federal Reserve System, building on Copeland's pioneering work at the National Bureau of Economic Research,[12] published a new set of social accounts giving estimates of sources and uses of funds for the entire economy, by major transactor groups. These flow-of-funds accounts are now available for the period 1939–56.[13] The inclusion of sector year-end cash holdings in these accounts makes computation of sector velocities a simple matter.[14]

The sector velocities shown in Chart 3 are ratios of annual nonfinancial uses to averages of beginning- and end-of-year demand de-

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and denominator of each term in equation (1) by the relevant sector money holdings ($m_1, m_2, \ldots m_n$), we obtain

$$V = (s_1/m_1 \cdot m_1/M) + (s_2/m_2 \cdot m_2/M) + \ldots (s_n/m_n \cdot m_n/M). \quad (2)$$

Each term of equation (2) consists of the product of a sector velocity (s_i/m_i) times its weight (m_i/M).

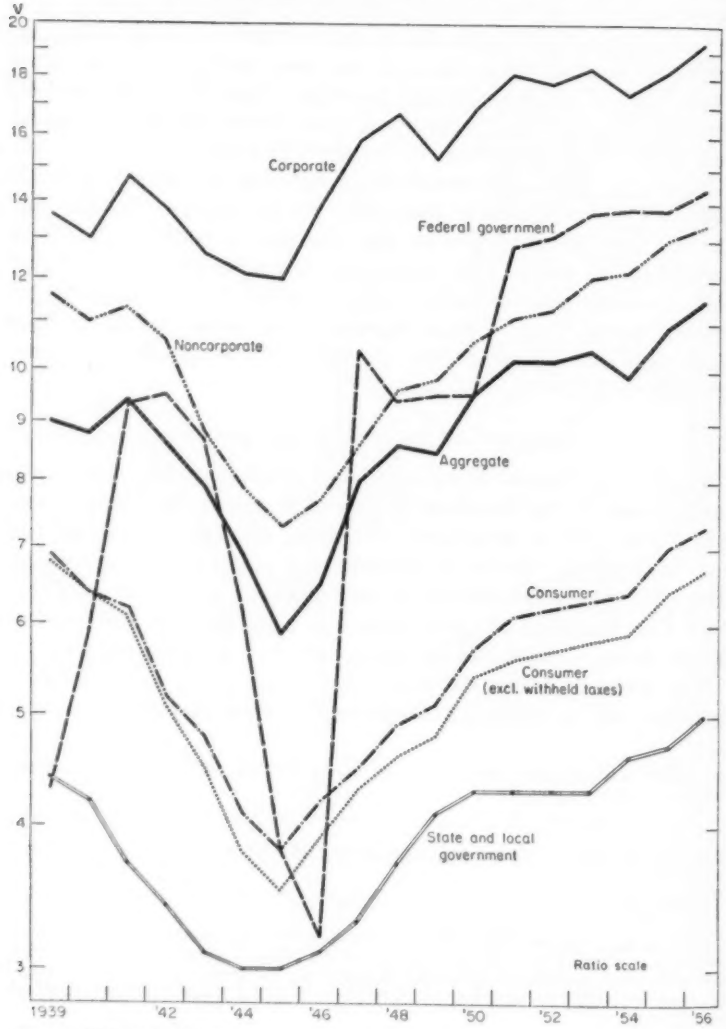
12. *Op. cit.*

13. It appears that the Federal Reserve will not extend the annual gross-flow accounts (which are necessary for velocity analysis of the kind presented here) beyond 1956; quarterly net-flow accounts have been prepared for the period 1952 to date (see "A Quarterly Presentation of Flow of Funds and Saving," *Federal Reserve Bulletin*, August, 1959).

14. This does not mean that these velocities are beyond reproach statistically. The year-end sector cash holdings, particularly by the non-corporate business sector, can be taken only as rough estimates; and the velocity numerators vary greatly in degree of grossness, as well as in reliability.

CHART 3

Flow-of-Funds Sector Velocities, 1939–56*



* Source: Tables A-3 and A-5.

posits and currency for each sector.[15] I have excluded the "banking" and "rest of world" sectors and have combined the "farm" and "unincorporated business" sectors. This leaves the following seven sectors: consumer, corporate business, non-corporate business, federal government, state and local government, insurance, and other investors. The latter two have been omitted from the chart. As indicated in Section II, the ratio of non-financial uses of all sectors to total money is an aggregate velocity measure designated as non-financial velocity; this also is plotted in Chart 3. Table 1 (part C) gives annual growth rates for these sector velocities in the postwar period.

The chart brings out strikingly the contrast between wartime and postwar velocity movements already evident in Chart 1. From 1939 to 1941 velocity rose in some sectors and fell in others; after 1941, falling velocity became the order of the day. The declines were much sharper for the federal, consumer, and non-corporate sectors than for the corporate sector. State and local velocity also fell substantially, though not so much as consumer velocity.

The postwar period, on the other hand, has been characterized by a pronounced upsurge of velocity. For every sector, the 1939–45 peak value had been exceeded by 1955 and as early as 1947 for the corporate sector.[16] Except for other investors, whose velocity reached a postwar peak in 1950, and the federal government, whose velocity has moved erratically, the rises have been remarkably steady throughout 1946–56. Even federal velocity has not been far out of line since 1947 (see Table 1), and its extremely low value in 1946 is largely the result of the huge sums obtained through the Eighth War Loan in December, 1945. This confirms the finding of the preceding subsection that velocity has risen throughout the economy since the end of the war—in business, household, and public sectors alike.

The most obvious differences among sectors are in velocity levels.

15. Two variants of consumer velocity were computed. One takes total non-financial uses for this group of transactors, while the other deducts withheld federal income and social insurance taxes. The latter seems clearly the more appropriate concept, since withheld taxes do not constitute payments of a sort that give rise to the holdings of cash by consumers.

E. T. Weiler has computed sector velocities from flow of funds. See his "The Flow of Funds and Monetary Theory," in American Statistical Association, *Proceedings of the Business and Economic Statistics Section, 1955–56*, pp. 52–58. In addition, the Federal Reserve Bank of Chicago, in a forthcoming velocity study, presents flow-of-funds sector velocities for 1950–56.

16. For the consumer sector the statement in the text is correct only when withheld taxes are included in the velocity numerator.

In 1956, for instance, corporate velocity was 1.34 times federal velocity, 1.44 times non-corporate velocity, 1.87 times insurance velocity, 2.88 times consumer velocity (excluding withheld taxes), 3.86 times state and local velocity, and 6.89 times velocity in the other investors sector. Another difference is in the degree of cyclical variability of sector velocities. Although both consumer and non-corporate velocity experienced reduced rates of growth in 1949 and 1954, the decline in aggregate velocity during these recession years resulted solely from sharply falling velocity in the corporate sector. The fall in velocity during World War II, on the other hand, occurred in all sectors (except insurance) but was much more severe for consumers (especially when withheld taxes are excluded) than for corporate business. Finally, the corporate and other investors velocities have been lagging since 1946, their rates of increase being only about half those of the consumer and non-corporate sectors.

Among flow-of-funds sectors, the consumer sector has consistently been most important as a holder of money. The fraction of total money held by this sector rose slightly during 1939–45 and sharply during the next two years. Since then it has varied within the narrow range of 37–41 per cent (Table A-6). The corporate and non-corporate sectors have been next in importance. Except for the federal sector, whose share rose and fell dramatically during 1942–47, no other sector has accounted for more than 9 per cent of total money since 1946. The postwar increase in the corporate share has been offset by a nearly corresponding decrease in the non-corporate share. Since corporate is substantially higher than non-corporate velocity, this change has tended to increase aggregate velocity. The increased share of the other investors and state and local sectors has had the opposite effect.

In total, these postwar shifts in weights had virtually no effect. Application of 1946 weights to the 1956 sector velocities yields an aggregate velocity figure nine-tenths of 1 per cent above that actually recorded in 1956.[17] This result reinforces a conclusion of the preceding subsection: shifts in sector weights have reduced, rather than increased, velocity since 1946.

CORPORATE VELOCITIES FROM *Statistics of Income*

Although the seven-sector breakdown of the flow-of-funds accounts adds significantly to our understanding of aggregate velocity, more detailed information would be desirable. It would be interesting, for

17. If 1947 or 1948 weights are used in this comparison, computed aggregate velocity in 1956 is 1.7 per cent below the recorded figure.

example, to obtain velocities for consumers by income, occupation, age, and other classes. While the required data are totally lacking for consumers, there is much additional information which yields useful approximations to velocity ratios for corporate subsectors. In general, all that is needed for such "velocity" computations are balance sheets and income statements for groups of firms. These are available from several sources.[18] Only the annual *Statistics of Income* is used here.

The velocities from *Statistics of Income* are ratios of total outlays, including tax and dividend payments but excluding capital expenditures, debt retirement, and securities purchases, to year-end cash holdings. The omission of capital expenditures is the only important conceptual difference between these estimates and those already discussed. Since the corporate velocity estimates from *Statistics of Income* conform closely to those from flow-of-funds accounts throughout 1939–56, it appears that conceptual differences are relatively unimportant.

Statistics of Income contains the ingredients for the construction of several hundred sector velocities.[19] For recent years these sectors consist of seven broad industry divisions (agriculture, forestry, and fishery; mining and quarrying; construction; manufacturing; public utility; trade; and service); fifty-four major industry groups; and ten asset-size classes for each of the foregoing. We shall examine velocity only for the seven industry divisions, selected major industry groups, and size classes for all corporations (except finance) and four major industry groups.

1. *Major industry divisions.*—Velocities for selected major industry divisions and for all non-financial corporations, 1931–57, are shown in Chart 4.[20] After establishing troughs in 1932 or 1933, in each division (other than the service division), velocity rose to 1937, fell from 1937 to 1940, rose in 1941, and fell from 1941 to 1943. During the postwar period Chart 4 resembles Charts 2 and 3: each

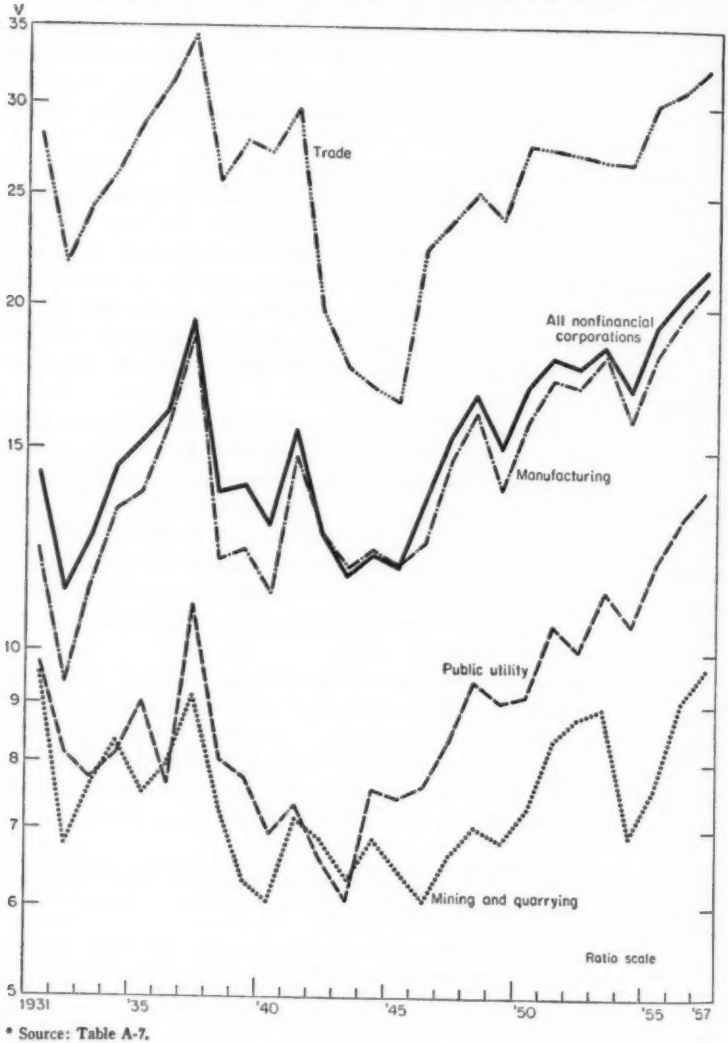
18. U.S. Treasury Department, *Statistics of Income* (Washington, annually); U.S. Federal Trade Commission–Securities and Exchange Commission, *Quarterly Financial Report for Manufacturing Corporations* (Washington, quarterly); Robert Morris Associates, *Statement Studies* (Philadelphia, annually); and reports of individual firms.

19. There are numerous problems in the use of these tabulations for velocity estimates. For instance, they refer to fiscal years of reporting firms rather than to calendar years; time deposits and perhaps even marketable securities in some cases are included in "cash"; classification of diversified firms in a single industry class is highly artificial; and, as noted in the text, capital expenditures are entirely ignored. In addition, because the universe of reporting firms with balance sheets is not identical in every year, we have relied solely on year-end cash figures rather than averages of beginning- and end-of-year cash.

20. Table A-7 contains velocities for industry divisions not shown in Chart 4.

CHART 4

SECTOR VELOCITIES BY SELECTED MAJOR INDUSTRY DIVISIONS, 1931–57*



* Source: Table A-7.

sector velocity experienced a net rise; the rates of rise, for the most part, are similar (average growth rates are presented in Table A-1); and, as was true throughout the prewar period, there are great absolute velocity differences. Manufacturing velocity is very close to that of all non-financial corporations in level, trend, and year-to-year movements. Trade velocity, though much higher, and mining velocity, though the lowest, move in similar fashion. In the other four industry divisions, velocity behaves with less regularity: service, agriculture, and construction velocities lagged behind the all-corporation trend, while public utility velocity rose much more rapidly. Once again we find that higher velocity has been a very general postwar phenomenon.

Weight shifts have been negligible among major industry divisions since 1946 (Table A-8). Manufacturing has consistently accounted for slightly over half of all cash held by non-financial corporations, and trade for 22–23 per cent. The shares of the service and construction industries have grown, while the share of the public utility industry has declined. However, the weighted average of 1956 sector velocities is the same, whether 1946 or 1956 weights are used. It is clear, therefore, that the postwar rise in corporate velocity is wholly the result of velocity rises within corporate industry divisions.

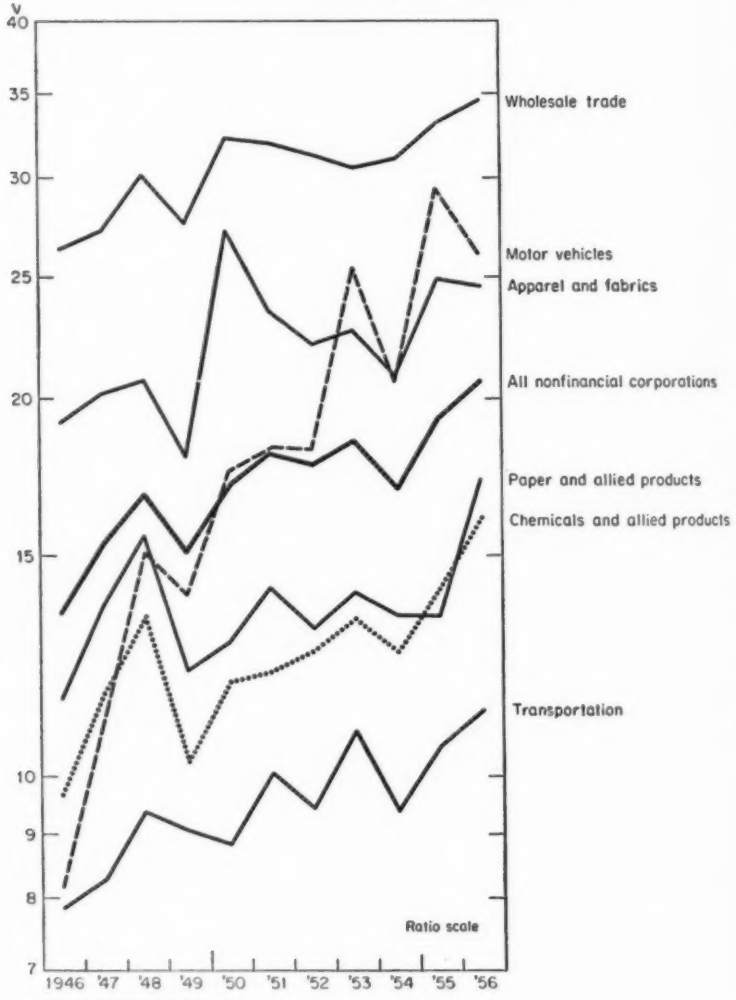
2. *Major industry groups.*—Charts 5*A* and 5*B* show velocities over the period 1946–56 for ten of the fifty-four major industry groups included in *Statistics of Income,* as well as for two broader categories—retail and wholesale trade. I have also computed velocities for thirty-two other major industry groups over this period. All forty-four series are presented in Table A-9; annual growth rates may be found in Table A-1.

These series provide additional evidence of the generality of the postwar velocity rise; only automotive repair services failed to increase over the period as a whole. However, the annual growth rates differ widely, varying from less than zero for one trade group and three services groups[21] to 13.1 per cent for automotive dealers and filling stations and 11.4 per cent for motor vehicles. Since 1951 the velocity trends of beverages, personal services, and food and kindred products have been downward. Retail-trade velocity, on the other hand, has risen almost without interruption throughout the postwar period.

21. Retail food trade, business services, personal services, and automobile repair services. Except for the last group, 1956 velocities exceeded 1946 values despite the negative growth rate.

CHART 5A

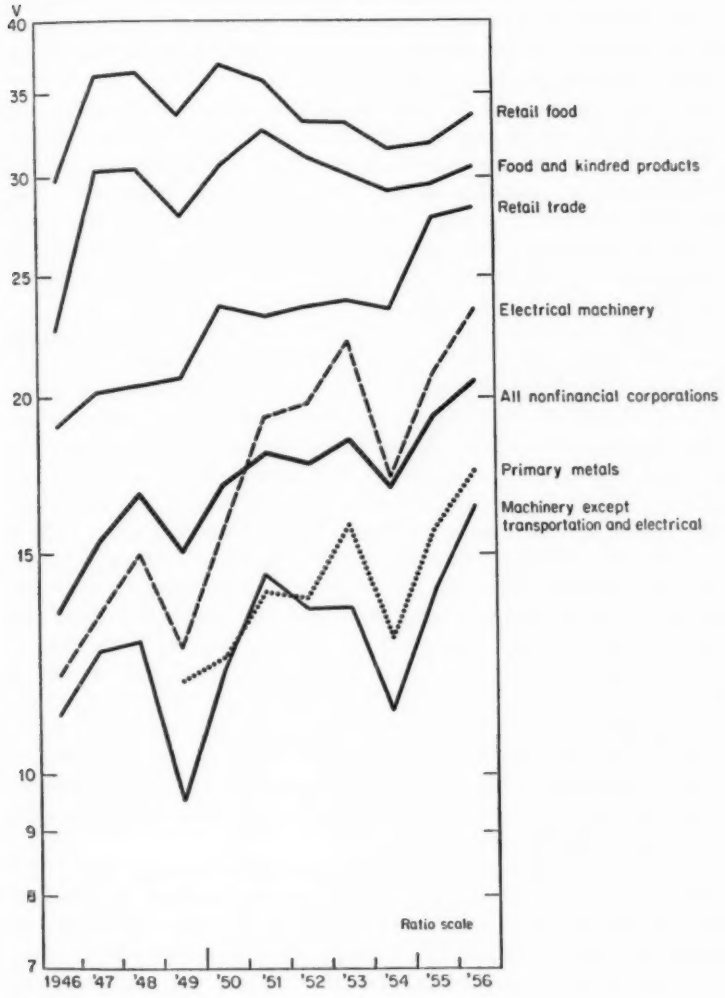
CORPORATE VELOCITIES, SELECTED MAJOR INDUSTRY GROUPS, 1946–56*



* Source: Tables A-7 and A-9.

CHART 5B

CORPORATE VELOCITIES, SELECTED MAJOR INDUSTRY GROUPS, 1946–56*



* Source: Tables A-7 and A-9.

Two other points are worth noting. Analysis of Charts 5*A* and 5*B* and thirty-two uncharted series reinforces the impression derived from Chart 4 that cyclical rises and falls in velocity are common to nearly all segments of business. Also, the differences in velocity levels by industry groups correspond broadly to the differences by industry divisions shown in Chart 4.

3. *Size classes.*—As I have already indicated, corporate data from *Statistics of Income* are classified by size of total assets as well as by industry. We know from Lutz's study of the interwar period that velocity is probably an inverse function of firm size.[22] Conceivably, changes in average firm size could explain the rising trend of corporate velocity; in any event, differences in the behavior of velocity among the various size classes may provide clues to the nature of the postwar velocity rise.

Chart 6 shows size-class velocities for all non-financial corporations for 1939, 1941, 1943, and 1946–57.[23] Once again it is clear that the postwar velocity rise has been broadly based, rising during 1946–57 in all ten size classes. There are some noteworthy differences among these classes in pattern of change and in velocity levels, particularly when the prewar and wartime data are taken into account. Firms in the largest size class ($100,000,000 and over) experienced a substantially greater velocity increase during 1946–57 (5.9 per cent per year) than did firms in any other category; in fact, this was the only size class whose velocity rose more rapidly than aggregate corporate velocity. Moreover, in the two largest size classes, velocity *rose* from 1939 to 1943, as well as from 1943 to 1946; in all other classes it fell in the earlier period, and the rate of decline was inversely related to asset size. As a result of both the wartime and the postwar convergence of size-class velocities, velocity in the largest class was 88.8 per cent of that in the smallest class in 1957, compared with only 27.5 per cent in 1939. It should also be noted that velocity has not risen significantly since 1950 for firms in the three smallest size classes.

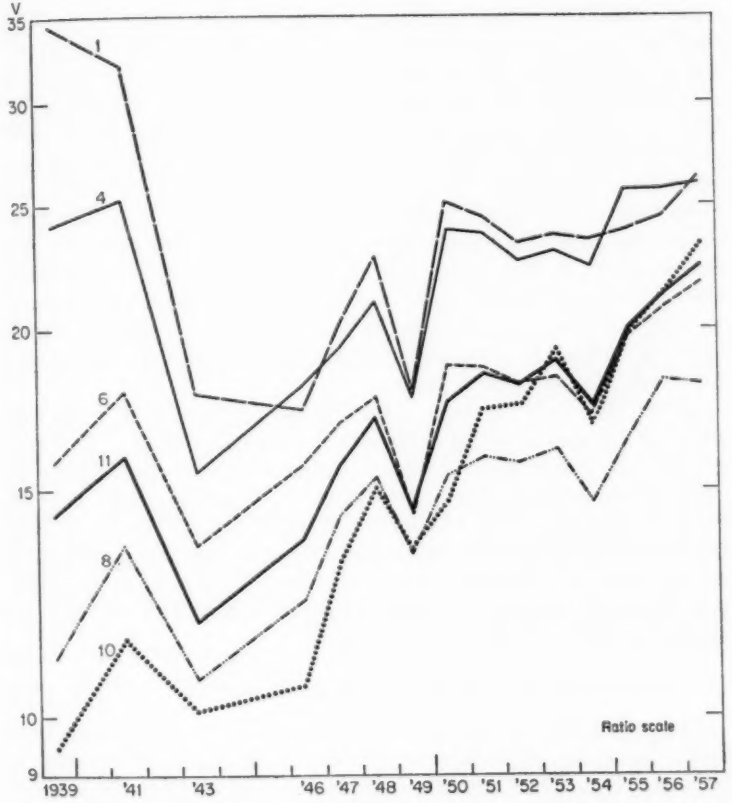
In general, smaller firms tend to have higher velocity than larger firms, although this is not evident among the smallest classes (less than $1,000,000 total assets) in recent years. The differences exhibited in Chart 6 are not so great as those among industries (Chart 4), a fact which suggests that size may be less important than in-

22. *Op. cit.*, chap. 4. Lutz's Chart 11 shows ratios of average cash balances to estimated annual cash payments for two samples of corporations: 46 large manufacturing firms, 1915–43, and 103 medium-sized and small manufacturing firms, 1916–42. Throughout 1916–42 the smaller firms had higher velocity.

23. Table A-10 contains velocities for size classes not shown in Chart 6.

CHART 6

SELECTED SIZE-CLASS VELOCITIES, NON-FINANCIAL CORPORATIONS, 1946–57*



* Source: Table A-10. The following code is used in this study for designation of asset-size class:

Curve Number	*Asset-Size Class*
1	Under $50,000
2	$50,000–$100,000
3	$100,000–$250,000
4	$250,000–$500,000
5	$500,000–$1,000,000
6	$1,000,000–$5,000,000
7	$5,000,000–$10,000,000
8	$10,000,000–$50,000,000
9	$50,000,000–$100,000,000
10	$100,000,000 and over
11	Total

dustry as a determinant of business velocity. However, these differences among size classes exist even within particular industries, as Table A-12 indicates.[24] Within each of four industries, smaller firms have tended to maintain higher velocities than larger firms. This finding strongly supports the view that the velocity differences shown in Chart 6 for all non-financial corporations are genuinely the result of firm size and not merely a reflection of varying industrial composition among size classes. In chemicals and motor vehicles (Table A-12) velocity behaved much the same as for all non-financial corporations; in particular, it rose more in the largest size class than in any other, and most markedly since 1950. Transportation and retail food trade, however, provide contrasts to the general pattern. In the former the sharpest velocity rises occurred in the intermediate classes; only moderate rises in the largest classes, and little change since 1948 in the smallest classes. Retail food trade velocity declined in all size classes during 1950–55—somewhat more for large, than for small, firms.

At the end of 1957, firms in the largest size class held about one-third of all non-financial corporate cash (Table A-11). This proportion has grown slowly since 1946, exerting moderate downward pressure on aggregate corporate velocity. However, there were declines in the shares of the $5,000,000–$10,000,000 and $10,000,000–$50,000,000 groups. As a result, the net impact of weight shifts on the trend of corporate velocity has been very minor: the aggregate figure is virtually the same whether 1946 or 1957 weights are applied to the 1957 size-class velocities.

IV. Why Velocities Differ at Any Point in Time

In Section III we noted persistent differences in velocity from sector to sector, those among corporate size classes being particularly striking. There appear to be several reasons for these differences.

DIFFERENCES AMONG CORPORATE SIZE CLASSES

1. *Inadequate velocity measures.*—Our measures of corporate velocity include neither capital expenditures nor financial payments. Both give rise to a demand for money, and their omission results in an understatement of corporate velocity. Insofar as large firms en-

24. The industries included in these tables are chemicals, motor vehicles, transportation, and retail food trade. They were selected for their quantitative importance, adequacy of representation in all size classes, and absence of major reclassifications during 1946–57.

gage in these types of payments more than small firms, the true relation between small- and large-firm velocities is obscured. While such is undoubtedly the case, it is difficult to judge its importance. We do know, as was already mentioned, that aggregate corporate velocities from *Flow-of-Funds*, which include capital outlays, closely resemble those from *Statistics of Income*. This suggests that size-class differentials are not greatly influenced by the omission of these expenditures.

Velocity differences among size classes are understated, though not appreciably, by a further statistical shortcoming. Our measures fail to exclude depreciation, amortization, and depletion allowances from the velocity numerator, even though they are not cash outlays. In recent years these items have been larger in relation to total costs for large firms than for small firms.[25] Even for large firms, however, they are a minor part of total costs.

Perhaps the major statistical distortion of our size-class velocities results from the common practice of "window-dressing" financial statements. It may well be that large corporations, nearly all of whom publish annual reports and conduct their affairs under close public scrutiny, indulge in this practice to a greater extent than do smaller firms. Since one goal of window-dressing is to exaggerate corporate liquidity, the effect clearly is to lower velocity, as computed from end-of-year cash. There seems to be no feasible way of eliminating this distortion from our data. However, it is interesting to note that quarterly size-class velocities for manufacturing corporations, computed from the FTC-SEC reports, reveal virtually the same differentials in the first three quarters of the year as in the final quarter. Presumably window-dressing is most important in end-of-year data.

2. *Analysis of velocity components.*—Velocity, which is the ratio of spending to cash, can be expressed as the product of two component ratios: spending to total assets and total assets to cash. Table 2 presents these component ratios for all ten size classes in two postwar years, 1947 and 1957. Taken at face value, the pattern of variability depicted in this table is highly interesting. As firm size grows, cash becomes a lesser part of total assets; at the same time, the ratio of spending to assets falls even more sharply. Thus the tendency for large firms to maintain relatively low velocities appears to result solely from low ratios of spending to assets in general—

25. Based on figures from the Federal Trade Commission–Securities and Exchange Commission, *Quarterly Financial Report for Manufacturing Corporations.*

i.e., from their relatively heavy use of capital in the production process.

Unfortunately, the data in Table 2 are influenced in some degree by a "regression effect." Inasmuch as the basis of classification of firms is size of total assets, one would expect ratios with total assets as a component to vary with size merely because of random variations in these assets. At any time, assets of some firms will be abnormally high or low; assuming that cash is not similarly affected, the ratio of assets to cash will therefore be abnormally high or low.

TABLE 2

VELOCITIES AND VELOCITY COMPONENTS FOR ALL NON-FINANCIAL CORPORATIONS, BY SIZE CLASSES, 1947 AND 1957

Size Classes*	1947			1957		
	Velocity	Ratio of Spending to Assets	Ratio of Assets to Cash	Velocity	Ratio of Spending to Assets	Ratio of Assets to Cash
1.....	20.05	3.351	5.985	26.12	3.512	7.438
2.....	19.33	2.888	6.695	24.34	2.806	8.675
3.....	19.55	2.748	7.115	25.12	2.681	9.370
4.....	19.39	2.566	7.556	25.97	2.606	9.965
5.....	18.76	2.393	7.840	24.13	2.422	9.962
6.....	16.92	2.010	8.417	21.60	2.053	10.521
7.....	14.90	1.678	8.878	19.06	1.711	11.135
8.....	14.29	1.445	9.886	18.14	1.431	12.674
9.....	13.14	1.167	11.262	20.86	1.383	15.090
10.....	13.22	0.833	15.861	23.19	0.932	24.889

* See note to Chart 6 for identity of size classes.

Small size classes are likely to include more firms with abnormally low than abnormally high assets; hence ratios of assets to cash will tend to be understated for small firms, while the opposite bias exists for large firms. In addition, the bias works in the opposite direction for ratios of spending to assets.

This objection is technically correct, but its importance is doubtful. Random variability in asset size would have to be very substantial to explain the differences revealed in Table 2. Furthermore, these differences make sense in terms of conventional monetary theory. The declining ratio of cash to assets as firm size increases is explained to a large extent by the rising ratio of government securities holdings to assets and to cash (Table 3). In other words, large firms tend to substitute government securities for cash much more

than do small firms.[26] The ratio of assets to cash plus government securities is much less a function of firm size than is the ratio of assets to cash alone. Possibly the ratio of assets to all liquid assets, including commercial paper and a few other items as well as government securities, would show no relation to firm size whatever. The declining ratio of spending to assets as firm size increases can also be readily explained, as we shall see below.

3. *The influence of deficit firms.*—One reason for the lower velocity ratios of large firms is that firms without net income hold a larger

TABLE 3

ANALYSIS OF GOVERNMENT SECURITIES HOLDINGS OF ALL NON-FINANCIAL CORPORATIONS, BY SIZE CLASSES, 1947 AND 1957

Size Classes*	1947			1957		
	Ratio of Government Securities to Cash	Ratio of Assets to Government Securities Plus Cash	Ratio of Spending to Government Securities Plus Cash	Ratio of Government Securities to Cash	Ratio of Assets to Government Securities Plus Cash	Ratio of Spending to Government Securities Plus Cash
1.....	0.054	5.675	19.02	0.045	7.118	25.00
2.....	.114	6.010	17.36	0.052	8.249	23.15
3.....	.184	6.007	16.51	0.078	8.691	23.30
4.....	.269	5.956	15.28	0.133	8.794	22.92
5.....	.325	5.918	14.16	0.201	8.292	20.09
6.....	.427	4.897	11.85	0.279	8.226	16.89
7.....	.549	5.730	9.62	0.405	7.924	13.56
8.....	.546	6.397	9.24	0.481	8.554	12.24
9.....	.451	7.761	9.06	0.631	9.252	12.79
10.....	0.677	9.459	7.88	1.107	11.814	11.01

*See footnote to Chart 6 for identity of size classes.

share of cash in small size classes than in large classes. In general, small firms with no net income tend to have higher velocity ratios than do small firms with net income.[27] Table 4 illustrates these relationships for 1946 and 1957. In the former year, 19 per cent of the velocity difference between the smallest and largest size classes disappears when firms without net income are excluded from the computations. In 1939 the same statistic was 21 per cent. Because of

26. The concept of money substitutes, which has been emphasized so much in recent monetary literature, contributes little, if anything, to the analysis of size-class velocity differences. From Table 3 it can be seen that ratios of corporate spending to holdings of cash plus government securities differ much more between large and small firms than do ratios of spending to cash alone (i.e., velocity).

27. Moreover, in the early years covered by this study the opposite tended to be true of large firms. See Table 4, 1946, for an example.

the substantial convergence of small- and large-firm velocities in the postwar period, the importance of deficit firms had become even greater by 1957: for firms with net income in that year, velocity was higher in the largest class than in any of the three smallest classes—a sharp contrast with the figures based on all firms.

4. *The cost of holding money.*—Apparently the major explanation of size-class differences in spending-asset ratios and therefore in velocity ratios is that the cost of holding money is much less for

TABLE 4

CORPORATE SIZE-CLASS VELOCITIES FOR ALL FIRMS AND FIRMS WITH NET INCOME AND PER CENT OF SIZE-CLASS MONEY HELD BY FIRMS WITH NET INCOME, SELECTED SIZE CLASSES, 1946 AND 1957

SIZE CLASSES*	Velocity, All Firms	Velocity, Firms with Net Income	Per Cent of Money, Firms with Net Income
A. 1946			
1	17.34	16.26	82.1
2	17.09	16.67	91.1
3	17.60	17.31	93.7
9	11.28	11.57	89.1
10	10.60	10.81	85.3
Aggregate, all classes	13.73	−13.84	90.2
B. 1957			
1	26.12	22.16	74.0
2	24.34	21.21	88.1
3	25.12	22.76	92.6
9	20.86	20.67	93.7
10	23.19	23.03	93.0
Aggregate, all classes	22.34	−21.44	89.9

* See note to Chart 6 for identity of size classes.

large firms than for small firms. This cost is a complex variable.[28] From one point of view it is the foregone yield that could be earned on securities; in this sense the cost of holding money is more or less the same regardless of firm size. It is also measured by the internal rate of return on capital to the firm and by the cost of borrowed funds, which would be the same as the rate of return in equilibrium.

For a variety of reasons the cost of funds is much higher for small

28. I have discussed some aspects of the cost of holding money at greater length in "Monetary Velocity in the United States," in *Studies in the Quantity Theory of Money*, pp. 195–205.

firms.[29] Table 5 contains a rough indication of this fact: the ratio of interest payments to interest-bearing debt, computed from *Statistics of Income,* was decidedly lower for large firms in each of the four years shown. It is clear that small firms have a strong incentive to substitute labor for relatively expensive capital. The result is larger current spending in relation to total assets and therefore to cash.

Perhaps the principal respect in which funds are more costly for small firms is related to their greater reliance on trade credit. Table 6 illustrates this strikingly for 1939, 1943, 1946, and 1957. Without exception, the ratio of accounts payable to total assets falls as firm size increases.[30] An even stronger decline shows up in the ratio of payables to long-term debt.

TABLE 5

RATIOS OF INTEREST PAID TO INTEREST-BEARING DEBT, NON-FINANCIAL CORPORATIONS WITH NET INCOME, BY SIZE CLASSES, SELECTED YEARS

Size Classes*	1939	1943	1946	1957
1	0.059	0.062	0.047	0.052
2	.060	.063	.044	.050
3	.058	.058	.043	.052
4	.054	.054	.043	.052
5	.052	.049	.041	.054
6	.046	.042	.036	.051
7	.048	.039	.036	.046
8	.045	.041	.033	.044
9	.044	.041	.031	.039
10	0.045	0.045	0.034	0.036

* See note to Chart 6 for identity of size classes.

For some users, trade credit is mainly a convenience that arises as part of normal business routines; for others, particularly small firms, it is viewed explicitly as a source of funds. Trade credit is not costless to the user, of course. For example, terms of "2/10 net 30" imply an annual interest charge of 36 per cent if the account is paid in 30 days. But small firms often have no better source of funds.

29. One of the largest and most recent bodies of evidence supporting this contention is contained in U.S. Board of Governors of the Federal Reserve System, *Financing Small Business,* Parts 1 and 2 (*Report to the Committees on Banking and Currency and the Select Committees on Small Business, April 11, 1958*). See particularly the chapters prepared by James B. Eckert, "Member Bank Lending to Small Business, 1955–57," pp. 371–95, and Geoffrey H. Moore, Thomas R. Atkinson, and Edward J. Kilberg, "Risks and Returns in Small Business Financing," pp. 40–106.

30. In part, these results may reflect a regression effect of the sort discussed above. However, the fact that the ratio of payables to long-term debt behaves in similar fashion casts doubt on the importance of this source of bias.

Long-term debt may be even more expensive or totally unavailable; Table 6 demonstrates that such debt is of minor importance for small firms, in contrast to large firms. Bank credit, though used heavily by small firms, is subject to close rationing by bankers through both price and non-price mechanisms. Because of these facts, the typical small firm manages its cash on a hand-to-mouth basis.

There is a final instance in which the cost of holding money may be a determinant of corporate velocity. Earlier it was noted that small firms without net income have higher velocities than profitable

TABLE 6

RATIOS OF ACCOUNTS PAYABLE TO ASSETS AND LONG-TERM DEBT, NON-FINANCIAL FIRMS WITH NET INCOME, BY SIZE CLASSES, SELECTED YEARS

SIZE CLASSES*	RATIOS OF ACCOUNTS PAYABLE TO ASSETS				RATIOS OF ACCOUNTS PAYABLE TO LONG-TERM DEBT			
	1939	1943	1946	1957	1939	1943	1946	1957
1.....	0.224	0.182	0.195	0.195	3.12	2.55	3.19	2.09
2.....	.184	.144	.177	.178	2.47	2.19	2.74	1.82
3.....	.158	.126	.171	.172	2.01	1.95	2.46	1.86
4.....	.127	.114	.159	.171	1.63	1.84	2.28	1.86
5.....	.118	.106	.142	.156	1.39	1.58	2.00	1.82
6.....	.097	.096	.122	.132	1.03	1.30	1.59	1.58
7.....	.081	.084	.102	.111	0.73	0.96	1.12	1.01
8.....	.066	.080	.087	.085	0.41	0.73	0.72	0.65
9.....	.051	.072	.076	.081	0.21	0.38	0.45	0.47
10.....	0.049	0.066	0.061	0.061	0.22	0.29	0.30	0.25

* See note to Chart 6 for identity of size classes.

small firms. It seems likely that these velocity differences result mainly from differences in the cost of holding money. In general, unprofitable firms have higher interest costs and rely heavily on costly trade credit. Cash balances are real luxuries for such firms, and their velocities are therefore high.

5. *Compensating balance requirements.*—At least one investigator, George Garvy, has held that compensating balance requirements tend to reduce velocity; in fact, Garvy argues that the increased prevalence of these requirements "is an important and perhaps even one of the major reasons why the transactions velocity of demand deposits in the fifties is considerably lower than in the twenties."[31] Inasmuch as compensating balances are required more commonly

31. George Garvy, *Deposit Velocity and Its Significance* (New York, 1959), p. 32.

of larger borrowers and by large banks,[32] Garvy's hypothesis, if correct, might help explain velocity differences among corporate size classes.

The corporate velocity pattern we have observed certainly is consistent with Garvy's hypothesis. Nevertheless, I am not persuaded that the differential incidence of compensating balance requirements has any substantial impact on business velocity; nor do I believe that velocity trends or differences in levels over time can be explained in this manner. On the contrary, one might argue that the main impact of these requirements, insofar as they have any effect at all, is to make bank services more expensive and thus increase the cost of holding money. I would expect firms that face burdensome balance requirements to substitute open-market borrowing or non-bank private placements for bank loans, so that spending per dollar of deposits would *rise*, not fall. Whether, in fact, such substitutions are actually made is a question for further investigation. However, it is significant that, during the postwar period, deposit turnover has risen substantially more in large cities, where balances are more commonly required, than in other centers and that corporate velocity has risen much more among large firms than among small firms.

INDUSTRY DIFFERENCES

The preceding explanation of velocity differences among size classes appears to be adequate for a given industry. However, the size-class differences shown in Chart 6 relate to *all* non-financial corporations. In some degree they reflect industry differences in velocity among firms of any size class, combined with non-proportional representation of all industries in each class.[33] By the same token, the industry differences shown in Charts 4, 5*A*, and 5*B* reflect, to some extent, differences in the size structure of the various industries.

A rough idea of the importance of differential size structure as a source of velocity differences among industries can be gained by comparing velocity with distribution of cash among size classes for several industries. Table 7 does this for major industry divisions in 1947. In the trade division, which had the highest velocity, firms with $50,000,000 or more total assets accounted for only 13.0 per cent of industry cash. Public utility firms, on the other hand, had

32. See "Credit Lines and Minimum Balance Requirements," *Federal Reserve Bulletin*, June, 1956.

33. As we have already noted, distortion from this source cannot be great (see Table A-12).

the next to lowest velocity and the highest per cent of industry cash held by large firms. Aside from these two cases, however, the relationship is weak. It does not appear that differential size structure is an important reason for industry differences in velocity.

In order to avoid differential size structure and profitability as a source of velocity variations by industry, I have computed velocity and component ratios for firms with net incomes in the $1- to $5-million size class, by major industry divisions for the year 1947 (Table 8). The variation in velocities is substantial—nearly the same as that for all firms shown in Table 7. Nevertheless, the ratios of assets to cash are all within the narrow limits of 7.8–8.5, except

TABLE 7

RELATION BETWEEN VELOCITY AND DISTRIBUTION OF MONEY AMONG SIZE CLASSES, MAJOR INDUSTRY DIVISIONS, 1947

Major Industry Division	Velocity	Per Cent of Industry Cash Held by Firms with $50,000,000 or More Total Assets
Trade	23.70	13.0
Construction	16.46	0.0
Manufacturing	14.59	42.1
Agriculture, etc.	10.54	13.0
Service	9.68	11.9
Public utility	8.38	66.2
Mining and quarrying	6.62	31.1

for the agriculture, forestry, and fishery industries. It is variations in the ratio of spending to assets that account for most of the observed differences in velocity. This agrees broadly with the picture we found above in our treatment of size-class differences.

Another similarity between industrial and size-class variations in velocity is the apparent relation in both cases to degree of reliance on trade credit. Table 8 shows two indexes of the importance of trade credit, again for fairly standardized groups of firms in each of the seven non-financial industry divisions. The ratio of accounts payable to assets is correlated loosely with velocity; a stronger relationship exists between velocity and the ratio of payables to long-term debt.

At least two interpretations can be placed on these facts. The first view advanced earlier in connection with our size-class analysis,

that heavy use of trade credit implies a high cost of holding money, undoubtedly has some validity. The other view is that heavy use of trade credit is associated with a high degree of coincidence between receipts and expenditures, which, in turn, means high velocity. I say "associated with" because the line of causality may run in either direction. In some instances use of trade credit tends to shorten the payments interval, thereby raising velocity; in others, use of trade credit is largely symptomatic of a payments interval that is short because of more basic aspects of production functions. In the latter case trade credit cannot be regarded as a significant velocity determinant.

TABLE 8

VELOCITIES, VELOCITY COMPONENTS, AND RATIOS OF ACCOUNTS PAYABLE TO ASSETS AND TO LONG-TERM DEBT, NON-FINANCIAL CORPORATIONS WITH NET INCOME AND WITH $1–$5 MILLION TOTAL ASSETS, BY MAJOR INDUSTRY DIVISIONS, 1947

Major Industry Division	Velocity	Ratio of Spending to Assets	Ratio of Assets to Cash	Ratio of Accounts Payable to Assets	Ratio of Accounts Payable to Long-Term Debt
Trade	25.08	3.196	7.848	0.182	3.187
Construction	15.11	1.788	8.449	.170	3.765
Manufacturing	9.85	1.240	7.941	.094	1.766
Agriculture, etc.	9.42	0.702	13.423	.092	0.970
Mining and quarrying	9.01	1.068	8.432	.069	0.811
Service	8.33	1.030	8.090	.092	0.398
Public utility	7.04	0.825	8.532	0.101	0.436

Considering the general nature of the various industry divisions, it becomes clear that the second view of trade credit and its relation to velocity has much merit. Trade, for example, is characterized by relatively low fixed costs and a high asset-turnover rate; the average interval between receipts and expenditures would tend to be short, and velocity would tend to be high, even if short-term debt were totally absent. To some extent, however, heavy use of trade credit probably has produced a further shortening of the payments interval. Construction—the other high-velocity industry—appears to have broadly similar characteristics. The mining and public utility industries, on the other hand, are clear examples of opposite tendencies: fixed costs are relatively high, and a substantial portion of outlays consists of lumpy capital expenditures. The same is true of agriculture and, less obviously, the service industry. Manufacturing

appears to fall in an intermediate category. Thus there seems to be a strong correlation between industry velocity and degree of coincidence between receipts and expenditures.

Industry differences in velocity probably are caused in part by factors other than those mentioned above. However, the role of such factors appears to be minor, and their analysis will not be pursued here.

DIFFERENCES BETWEEN THE CORPORATE AND NON-CORPORATE SECTORS

We saw in Chart 3 that non-corporate velocity was substantially lower than corporate velocity throughout 1939–56. One obvious reason for this persistent difference is the heavy representation of agriculture in the non-corporate sector. In 1955, for instance, 32.1 per cent of non-corporate cash was held by the farm subsector. Although non-corporate velocity in that year was 12.6, farm velocity was only 4.7, while velocity of unincorporated businesses was 15.8. Corporate velocity in 1955 was 18.6; hence about half the differential between corporate and non-corporate velocities would disappear if agriculture were excluded from the calculations.

On the other hand, the unincorporated and incorporated business sectors differ in industrial composition. Trading firms, which usually have high velocity, are much more important in the former sector. Furthermore, unincorporated firms within any industry are probably smaller, on the average, than corporations. One would therefore expect the velocity of unincorporated firms to exceed that of corporations. Why such is not the case is a problem that cannot be examined here.

V. Why Velocity Has Risen since the End of the War

Earlier we considered and rejected two possible explanations of the postwar velocity rise. In Section II we saw that the similar behavior of three aggregate velocity measures since 1946 argues against hypotheses that imply differential behavior of velocities. In Section III we saw that the postwar velocity rise cannot be explained by weight shifts in favor of low-hoarding sectors. Insofar as weight shifts have had any effect at all, they have been velocity-reducing. We turn now to other explanations of postwar velocity behavior.

A strong case can be made for the view that much of the postwar velocity rise has been simply a recovery from abnormally low wartime values. The important question is *how much* of the rise has resulted from war-related factors, how much from more fundamental

and persistent forces. Clearly, the question can be answered only if we understand the nature of velocity changes during the war.

In an earlier study based entirely on aggregate data, I concluded that income velocity fell during the war for four major reasons:[34] an understatement of prices and income in official statistics (i.e., velocity fell less than the charts indicate, when actual prices and transactions are taken into account); a redistribution of money from high- to low-velocity sectors; an increased demand for money as people moved about the country and as the uncertainties of demobilization drew closer; and the accumulation of liquid assets of all types because of reduced opportunities to purchase consumer goods during the war.

The sectoral data of Section III partially confirm this analysis. For instance, the importance of weight shifts between 1939 and 1946 may be estimated by recomputing non-financial velocity in 1946 with 1939, rather than 1946, weights. Non-financial velocity was 9.0 in 1939 and 6.5 in 1946; it would have been 7.4 in 1946, had the 1939 weights been applicable in the later years. Thus more than one-third of the decline in non-financial velocity during 1940–46 resulted from weight shifts, consisting principally of a decline in the corporate sector's share of total money and a rise in the shares of the consumer, non-corporate, and federal sectors. It must be emphasized that these weight shifts have tended to persist since the end of the war. Hence, insofar as velocity fell during the war because of weight shifts, the subsequent rise in velocity cannot be regarded as "a recovery from abnormally low wartime values."

Other sector data that tend to confirm the conclusions of the earlier study but also support the hypothesis of a postwar return to normal velocity levels are reviewed below. However, for the corporate sector a rather different interpretation is needed.

IMPLICATIONS OF CORPORATE VELOCITY BEHAVIOR, 1939–47

Evidence presented in Section III strongly suggests that the decline in corporate velocity after 1941 was, to a great extent, a basic change unrelated to the special circumstances of a wartime economy. Chart 6 revealed a wide disparity in the velocity experience of large and small firms during the war. Large-firm velocities did decline slightly in 1942 and 1945, but the fall in aggregate corporate velocity during the war resulted largely from the severe decline among small and medium-sized firms, particularly the former. It is clear

34. *Studies in the Quantity Theory of Money*, pp. 227–29.

that most of this decline was not caused by wartime controls: by 1948, long after the controls had been lifted, small-firm velocities were still far below their 1939 and 1941 levels (Chart 6 and Table 9). Large-firm velocities, on the other hand, were already well above their 1941 peaks by 1947. Apparently, velocity had fallen permanently for small and medium-sized firms relative to large firms.

Actually, this convergence of corporate velocities was already taking place before Pearl Harbor. Velocity declined in all size classes in 1940—presumably because of increasingly easy money

TABLE 9

PER CENT RECOVERY FROM 1941–43 VELOCITY DECLINE BY 1948, NON-FINANCIAL CORPORATIONS, BY ASSET-SIZE CLASSES

SIZE CLASSES*	VELOCITIES		PER CENT RECOVERY FROM 1941–43 DECLINE: [COL. (2) ÷ COL. (1)] × 100
	1941 Minus 1943 (1)	1948 Minus 1943 (2)	(3)
1	14.23	4.83	33.9
2	14.20	5.53	38.9
3	12.18	6.05	49.7
4	9.73	5.43	55.8
5	6.90	5.07	73.5
6	4.34	4.14	95.4
7	3.54	5.61	158.5
8	2.89	4.59	158.8
9	0.11	3.88	3527.3
10	1.47	4.94	336.1
Total, all classes	4.06	5.21	128.3

* See note to Chart 6 for identity of size classes.

and uncertainty about the business outlook—and rose in all classes in 1941. However, while the declines of 1940 were roughly similar percentagewise among size classes, the rises of 1941 were not. For small firms the 1941 velocity rises were extremely modest, and the net movement during 1940 and 1941 was downward. Large firms, on the other hand, raised their velocity ratios substantially in 1941 and over the 2-year period as well.

As a preliminary to our analysis of these changes, let us compare the behavior of size-class velocities with their component ratios—spending to assets and assets to cash—during 1939–47.

Table 10 presents 1939-based indexes of size-class velocities and their components. Velocity and the ratio of assets to cash conformed quite closely to one another, the direction of change being the same

TABLE 10

CORPORATE SIZE-CLASS VELOCITIES AND COMPONENT RATIOS EXPRESSED AS RATIOS OF 1939 VALUES, SELECTED YEARS

SIZE CLASSES*	1941	1943	1946	1947
	Velocities			
1	0.931	0.518	0.504	0.583
2	0.994	0.525	0.564	0.638
3	1.030	0.578	0.653	0.726
4	1.045	0.641	0.748	0.804
5	1.080	0.736	0.900	0.938
6	1.136	0.861	0.993	1.074
7	1.159	0.876	1.092	1.190
8	1.227	0.967	1.110	1.290
9	1.078	1.067	1.160	1.352
10	1.218	1.063	1.118	1.394
	Ratios of Spending to Assets			
1	0.794	1.112	1.523	1.107
2	.788	1.176	1.496	1.260
3	.787	1.266	1.583	1.422
4	.759	1.373	1.691	1.556
5	.718	1.429	1.803	1.685
6	.679	1.544	1.864	1.772
7	.705	1.620	1.947	1.931
8	.748	1.637	1.903	1.916
9	.750	1.970	2.118	2.177
10	0.616	1.873	2.179	2.158
	Ratios of Assets to Cash			
1	1.173	0.466	0.331	0.526
2	1.262	.466	.377	.507
3	1.310	.457	.413	.511
4	1.376	.467	.443	.517
5	1.506	.515	.500	.557
6	1.674	.558	.533	.606
7	1.644	.541	.561	.616
8	1.640	.591	.583	.673
9	1.440	.542	.548	.621
10	1.974	0.568	0.513	0.646

* See note to Chart 6 for identity of size classes.

in thirty-three of forty instances recorded in the table. The ratio of spending to assets, however, conformed with velocity in only thirteen of the forty instances. In all classes this ratio was substantially higher, and the ratio of assets to cash substantially lower, in 1947 than in 1939. The convergence of velocities described above thus resulted largely from dissimilarities in behavior of spending-assets ratios. These ratios approximately doubled over the 8-year period for firms in the four largest classes, compared with a mere 8 per cent rise in the smallest class.

Earlier we saw that differences in the importance of firms without income help explain velocity differences between small and large firms at any point in time. By the same token, the differential velocity movements among corporate size classes are attributable in part to the diminished importance of deficit firms, as business conditions improved after 1940. In 1939, assets of deficit firms made up 27.4 per cent of total non-financial corporate assets; for firms with less than $50,000 assets, this figure exceeded 50 per cent. By 1943 the business climate had changed dramatically. Assets of deficit firms had fallen to 3.9 per cent of the total.

About a quarter of the velocity decline in the smallest class from 1939 to 1943 resulted directly from the increased profitability of business. However, this effect was trivial for firms with more than $100,000 assets and even for small firms after 1943.[35]

In one respect that seems important for velocity analysis the wartime business expansion differed sharply from typical peacetime expansions—credit markets remained easy. Short-term market yields were already extremely low in 1939 and remained under 1 per cent until 1947 or later. Bond yields eased somewhat during the war, while rates on bank loans fluctuated within a narrow range around their low prewar levels. The crude measures of interest costs for profitable firms in Table 5 show some decline in average rates paid

35. Compare the following velocity data for all firms and firms with net income:

	All Firms	Firms with Net Income
Under $50,000 assets:		
1939	34.42	29.31
1943	17.83	17.24
1946	17.34	16.26
$50,000–$100,000 assets:		
1939	30.28	28.90
1943	15.90	15.79
1946	17.09	16.67
$100,000–$250,000 assets:		
1939	26.94	26.56
1943	15.58	15.51
1946	17.60	17.31

by medium-sized and large firms between 1939 and 1943. From 1943 to 1946 the decline accelerated and was experienced by firms of all sizes.

The fact that velocity failed to rise during the only recent business expansion in which interest rates did not rise certainly suggests that interest rates are a significant velocity determinant. However, it seems unlikely that they alone could have produced the sharp velocity declines among profitable firms during the early war years. To some extent these declines may have resulted from curtailment of business spending because of emergency controls, but the substantial rise in spending-asset ratios from 1941 to 1943 and 1943 to 1946 (see Table 10) does not square well with this interpretation. Furthermore, if this was the reason for convergence of velocities during 1939–43, why did the convergence persist after controls had been removed?

There is another possible explanation for the wartime behavior of corporate velocity. Table 6 shows a substantial decline during 1939–43 in the importance of trade credit among small and medium-sized firms with net income. Among larger firms the reverse was true. Although various interpretations may be placed on these facts, the most convincing is that the war-induced prosperity produced a marked improvement in business credit-worthiness, particularly among smaller firms. Apparently, these firms were able to obtain funds from less costly sources than formerly, and cash balances were no longer a prohibitively expensive luxury.

CORPORATE VELOCITY SINCE 1947

By 1947 the four largest size classes had regained their 1941 velocity peaks, and the wartime episode was clearly over. Corporate velocity continued upward during 1948–50, except for a decline in 1949. The rise in 1948 and the fall in 1949 appear to have been a normal cyclical change that affected most firms in roughly the same manner. The sharp jump in velocity in 1950 was another matter, however: it was much sharper for small firms than for large firms, and the largest size class did not even recover to its 1948 cyclical peak. As a result, small-firm velocity rose more during 1948–50 than did that of large firms. Table 11 reveals that in all but the largest class the velocity rise consisted almost entirely of a rise in the ratio of total assets to cash rather than a rise in the ratio of spending to total assets. The latter ratio actually declined during this period of rapidly rising velocity in four of the five smallest size classes.

We can be fairly certain that these disparate velocity movements in 1950 did not result from a greater reliance on substitute (i.e., non-cash) sources of liquidity by small firms: large and small firms had approximately the same incentives to switch from cash into government securities. In addition, the facts do not support the money-substitute hypothesis. As Table 11 indicates, in all but the three largest size classes the ratio of government securities to cash was lower in 1950 than three years earlier. A substantial redistribution of corporate holdings of government securities took place in this period, but in exactly the opposite direction to that implied by the money-substitute hypothesis.

TABLE 11

PER CENT CHANGE IN VELOCITY, COMPONENT RATIOS, AND RATIO OF GOVERNMENT SECURITIES HOLDINGS TO CASH, NON-FINANCIAL CORPORATIONS, BY SIZE CLASSES, 1947–50

Size Classes*	Per Cent Change in Velocity	Per Cent Change in Ratio of Assets to Cash	Per Cent Change in Ratio of Velocity Numerator to Assets	Per Cent Change in Ratio of Government Securities Holdings to Cash
1.....	24.7	27.5	−2.2	−25.9
2.....	24.9	29.0	−3.2	−24.6
3.....	25.6	27.8	−1.7	−27.7
4.....	22.8	21.7	+0.9	−27.1
5.....	16.0	17.6	−1.3	−22.2
6.....	10.5	10.0	+0.5	−18.5
7.....	13.2	12.5	+0.6	− 9.1
8.....	7.6	4.6	+2.8	+ 7.7
9.....	15.0	12.8	+2.0	+44.6
10.....	11.3	4.5	+6.6	+91.4

* See note to Chart 6 for identity of size classes.

A more plausible interpretation of the events of 1950 is that they resulted from a differential tightening of credit among size classes. Bank loans expanded with great rapidity in the latter half of 1950, but the rate of expansion was considerably less for small than for large firms, at least in manufacturing.[36] Small firms, as we saw in Table 11, were adding to their assets at a faster rate than to their spending, but, to finance this buildup of assets, they were unable or unwilling to go into debt to anywhere near the extent that large firms were.[37] Instead, they liquidated investments and trimmed cash re-

36. See Federal Trade Commission–Securities Exchange Commission, *Quarterly Financial Report of Manufacturing Corporations* (2d quarter, 1951).

37. Thus firms in the smallest class increased accounts and notes payable by less than 4 per cent in 1950, and in the next to smallest class by 11 per cent; the largest

quirements in relation to other assets, with a consequent rise in velocity.[38]

Another factor that probably affected corporate velocity in 1950 was the Korean War and the partial military mobilization that accompanied it. Wholesale prices climbed by about 15 per cent in the last half of 1950, and expectations of inflation (or shortages) were widely held. In this situation businessmen hurriedly built up inventories. To some extent, cash balances were drawn down to finance this buildup, and velocity rose. Inventories data clearly indicate that small firms participated in this speculative surge to a much greater extent than did large firms.[39]

Beginning in 1951, there were important new developments. Although business conditions were good throughout most of the 1951–53 period, velocity fell moderately in the seven smallest size classes. At the same time it rose sharply in the two largest classes and moderately in the remaining class (class 8). A substantial convergence of size-class velocities had set in again. In all classes, velocity fell in 1954, a recession year, and rose in 1955, a year of vigorous recovery; and, in all classes, velocity was markedly higher by the reference-cycle peak year, 1957, than in 1953. However, the rates of increase during 1954–57 were uneven, varying directly with corporate size, and moderate additional convergence resulted.

Table 12 shows percentage changes in size-class velocities for the entire period 1950–57. Large firms, which hold the lion's share of corporate cash, were responsible for most of the velocity rise in this period. Table 12 and Chart 7 analyze these velocity changes in terms of their component ratios. As was true during 1948–50, velocity increases during 1951–57 consisted almost entirely of increases in the ratio of assets to cash. The table also shows, however, that these increases were not caused by shifts from cash to government securities: the ratio of government securities holdings to cash fell in all but the smallest class in this period; for non-financial corporations as a whole this ratio fell from 0.69 in 1950 to 0.54 in 1957.[40]

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class (class 10) increased these items by 28 per cent, while class 8 increased them by 46 per cent. The same tendency was true of bonds and mortgages payable. Computed from *Statistics of Income* (1949 and 1950), Part 2, Table 6.

38. The four smallest size classes reduced their investments in 1950, while the others (except class 9) increased them—sharply in the case of the largest class.

39. See *Statistics of Income* (1950), Part 2, Table 6.

40. On the other hand, the declines in this ratio were generally higher for small firms than for large firms, indicating that corporate holdings of government securities were redistributed from small to large firms—a change that is consistent with the observed pattern of velocity movements.

Corporate velocity movements during 1951–57 appear to have resulted from at least three distinct factors. First, the tendency for velocity to decline during 1951–53, except in the three largest size classes, seems to represent a reversal of that part of the 1950 rise that resulted from inventory speculation. We noted above that small firms participated in the 1950 movement to a greater extent than did large firms. It is not surprising, therefore, to find that small firms were more greatly affected by the cessation of inflationary pressures after early 1951. Second, there was a very modest redistribution of

TABLE 12

PER CENT CHANGE IN VELOCITY, COMPONENT RATIOS, AND RATIO OF GOVERNMENT SECURITIES HOLDINGS TO CASH, NON-FINANCIAL CORPORATIONS, BY SIZE CLASSES, 1950–57

Size Classes*	Per Cent Change in Velocity	Per Cent Change in Ratio of Assets to Cash	Per Cent Change in Ratio of Velocity Numerator to Assets	Per Cent Change in Ratio of Government Securities Holdings to Cash
1.....	4.4	− 2.5	+ 7.1	+12.5
2.....	0.8	+ 0.4	+ 0.4	−39.5
3.....	2.3	+ 3.1	− 0.8	−41.4
4.....	9.0	+ 8.3	+ 0.6	−32.1
5.....	10.8	+ 8.1	+ 2.5	−20.6
6.....	15.5	+13.7	+ 1.6	−19.8
7.....	13.0	+11.4	+ 1.4	−18.8
8.....	17.9	+22.5	− 3.7	−18.2
9.....	38.0	+18.8	+16.2	− 3.2
10.....	57.5	+50.1	+ 5.0	−14.6

* See note to Chart 6 for identity of size classes.

corporate holdings of government securities from small to large firms. Thus the two largest classes held 67.8 per cent of the total in 1950, compared with 71.0 per cent in 1957. We have already seen, however, that these holdings declined relative to cash, except in the smallest class. At most, therefore, this change played a minor role in the *differential* velocity movements during 1951–57; it does not explain the generally rising trend of corporate velocity, nor was it sufficiently powerful to account for much of the size-class differentials that we have observed.

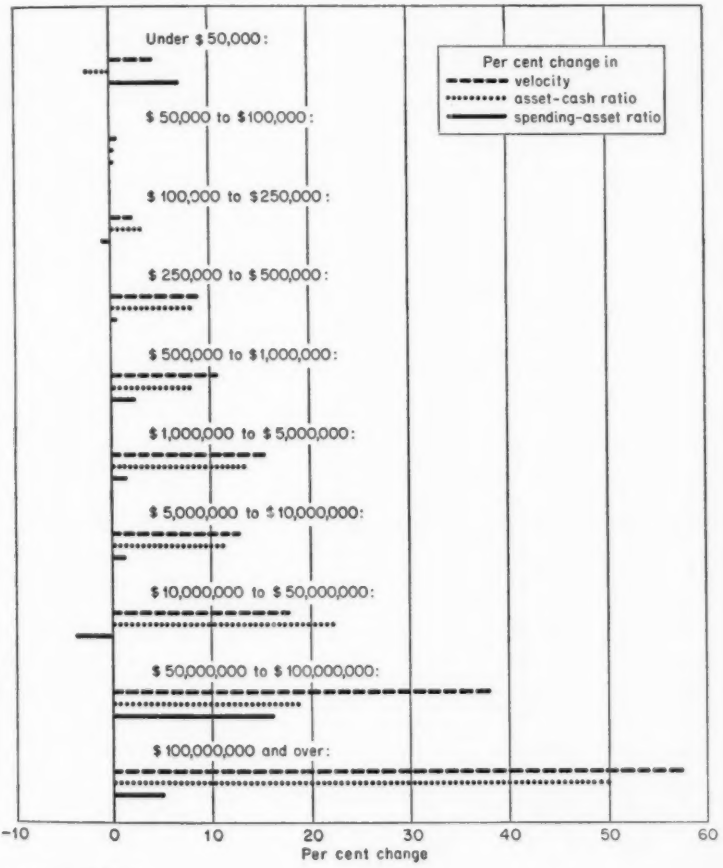
A third factor—the rising cost of holding money—seems a more promising explanation of these corporate velocity changes. The fact that interest rates rose during 1951–57 needs no documentation. The rise, particularly on short-term debt, was evident in all parts of the credit market. The question remains: Were interest-rate changes

during 1951–57 great enough to account for the observed velocity changes, and, if so, how can they explain the size-class differentials?

There seems to be no way of providing a definitive answer. Plausible arguments were presented above in support of the hypothesis that corporate velocity is a function of the cost of holding money; this hypothesis helps explain both size-class differentials at any

CHART 7

PER CENT CHANGES IN VELOCITIES, ASSET-CASH RATIOS, AND SPENDING-ASSET RATIOS, 1950–57, NON-FINANCIAL CORPORATIONS, BY SIZE CLASSES*



* Source: Table 12.

point in time and differential movements over time. During 1951–57 rates charged by banks on short-term loans to business rose from about 2¾ per cent to nearly 4¾ per cent in New York City. Commercial paper rates rose comparably, and bond yields rose by more than 50 per cent.[41] These were substantial changes, in my judgment fully adequate to account for velocity rises of the order actually experienced.

The differential velocity movements in this period present a greater problem. They can be partly explained by the fact that bank rates rose more on large loans than on small loans.[42] However, the size-class differentials depicted in Table 8 are much greater than one would expect solely because of a diminished spread between rates on large and small loans, particularly when it is recalled that

TABLE 13

PER CENT CHANGE IN CORPORATE VELOCITY, BY MAJOR INDUSTRY DIVISION, 1950–57

Major Industry Division	Per Cent Change in Velocity
Public utility	51.4
Agriculture, etc.	33.7
Mining and quarrying	32.2
Manufacturing	31.6
Trade	16.7
Service	12.6
Construction	11.5

small-firm velocity rose little in this period, despite significant increases in the cost of borrowed funds. It is possible that small firms, with a higher cost of holding money, had reached a relatively inelastic part of the demand curve for money by 1951. On this interpretation, even if the spread between the cost of holding money for small and large firms had remained constant during 1951–57, most of the actual convergence of size-class velocities might well have taken place.

The preceding discussion accounts for the rise in corporate velocity during 1951–57 and for the differential movements among size classes. In addition, it has the great merit of being consistent with differential movements among industries during this period. Table 13 gives percentage changes in velocity, 1950–57, by major industry

41. *Federal Reserve Chart Book on Financial and Business Statistics,* Historical Suppl. (September, 1958), pp. 41–46.

42. "Bank Rates on Short-Term Business Loans," *Federal Reserve Bulletin,* December, 1958, p. 1421, and Federal Reserve Bank of New York, *Monthly Review,* June, 1958, p. 84.

divisions. The rise was greatest in the public utility industry and least in construction; we saw earlier (Table 7) that large firms are most important in the former and least important in the latter. The relationship between the size structure of industry and the degree of velocity rise during 1951–57 is evident among the other industries as well: both manufacturing and mining and quarrying are characterized by relatively large firms, and both experienced sharp velocity increases; on the other hand, the trade and service industries, where small units predominate, lagged far behind. The only exception is agriculture.

Various other explanations of the rise in corporate velocity after 1950 might be advanced, some of them with a measure of plausibility. For instance, one might argue that the mildness of the 1948–49 and 1953–54 recessions, coupled with the growing realization that international tensions would not soon ease, caused a change in business expectations about the economic future.[43] Another possible factor might be cost pressures, particularly labor costs. Neither of these explanations, however, unlike the cost of holding money, can account for *differential* movements among both size classes and industries. In the final analysis, therefore, we come back to the cost of holding money as the critical variable determining corporate velocity changes, as well as an important variable determining differences among size classes at any point in time.

CONSUMER VELOCITY

The contribution of the consumer sector to non-financial velocity outweighs that of other sectors by a substantial margin (Table A-7). It is regrettable, therefore, that there are no data on cash behavior within consumer subgroups, such as exist for the corporate sector. This is all the more unfortunate because the consumer sector includes such diverse elements as households of greatly varying circumstances and personal trusts. Nevertheless, despite this lack, one can make reasonable inferences about the determinants of postwar consumer velocity behavior. As with corporations, the first problem is to separate the transitory war-related movements from other velocity changes.

One of the more interesting facts shown in Chart 3 is the sizable decline in consumer velocity in 1940 and 1941, before the American

43. Milton Friedman places heavy emphasis on "the public's expectations about the likely degree of economic stability." See his discussion along these lines in *Towards a Firmer Basis of Economic Policy: 41st Annual Report, National Bureau of Economic Research* (New York, 1961), pp. 41–42.

economy was placed under full-scale mobilization. Some of this decline may have resulted from growing concern with the international situation as it affected the economic future. In addition, by 1941 the military buildup was causing many geographical and occupational shifts among the population—factors which may have increased the demand for money. In my judgment, however, neither of these explanations can account for declines of the size experienced, particularly when it is realized that other developments, such as the growing fear of inflation and prospective wartime shortages, were tending to raise consumer velocity. It seems reasonable to conclude that another force—rapidly rising per capita real income—was pulling consumer velocity down in these years. Households apparently wish to "consume" more of the services of cash as their incomes rise; that is, their desired cash balances rise faster than expenditures.[44] It appears that this income effect was largely responsible for the declining trend of income velocity for a century or more prior to World War II.

There is no reason to think that it has not continued to operate since 1939. On the contrary, developments since then are consistent with two important implications of the income effect. Other things remaining the same, a rise in income will cause a decline in household velocity relative to non-household and aggregate velocity; in addition, the household share of total cash will rise.[45] During the 1939–56 period, consumer velocity fell relative to velocity in other fund-flow sectors, and consumer cash holdings rose relative to total cash.

If the above interpretation is accepted, it becomes clear at once that much of the decline in consumer velocity during 1942–45 resulted from the rapid increase in real income per capita rather than from transitory factors associated with wartime economic policy. A straight projection of the 1939–41 trend yields a consumer velocity figure midway between the actual 1947 and 1948 values, but this probably exaggerates the strength of the income effect and underplays the transitory war-induced changes. Whether or not these transitory changes had worked themselves out by 1948 is questionable, since consumer velocity continued to rise during the recession

44. The income effect is discussed further in *Studies in the Quantity Theory of Money*, pp. 205 ff. One can postulate conditions under which the income effect applies to businesses and governments (see Friedman, *The Demand for Money; Some Theoretical and Empirical Results*). However, the effect seems most clearly relevant to households.

45. However, the household share could fall as income rises if a sufficiently extensive decline in vertical integration occurred at the same time.

year 1949. However, by 1949 three years had passed since the armed forces had been demobilized and price controls terminated; the preliminary phase of postwar inflation had come to an end the year before, and non-price rationing was a thing of the past. It therefore seems reasonable to conclude that the postwar adjustment period was over for the consumer sector no later than 1949. Taking this as the pivotal year, then, 1941–56 is subdivided into distinct periods—1941–49 and 1950–56—subject to largely different velocity determinants.

During the first of these periods, consumer velocity probably would have fallen because of the rapid income rise, if for no other reason. But there were other reasons for the decline, which, taken together, were more important than the income effect. Three of them were mentioned earlier:[46] (1) understatement of household expenditures because of unrecorded transactions and understated prices; (2) an increased demand for money as people moved about the country and faced uncertainties of various sorts; and (3) a reduction in opportunities to purchase consumer goods during the war. A fourth reason must be added: the high marginal rates of taxation during the war, which reduced the attractiveness of income-earning assets.

The first two reasons are clear enough, though difficult to document. Both probably imply an increased demand for currency relative to demand deposits, and the currency ratio did rise sharply during the war.[47] The third reason requires brief elaboration. There is little question that wartime economic policy did effectively narrow the range of alternatives available to households in disposing of income. Gas rationing and the cessation of civilian automobile production early in 1942 were probably most important in this respect, but spending opportunities were also curtailed by many other changes directly related to the war—for example, the transfer of millions of civilians into the armed forces. The main impact was on expenditures for consumer durables, which fell in 1942 and 1943 and were still well below the 1941 level at the end of the war. The released income did not spill over into spending on non-durables: the ratio of non-durables expenditures to personal disposable income fell sharply during this period. The ratio of total personal consumption ex-

46. See p. 513.

47. For a full discussion of factors responsible for the rise in currency during the war see Phillip D. Cagan, *The Demand for Currency Relative to Total Money Supply* (National Bureau of Economic Research, Occasional Paper No. 62 [New York, 1958]).

penditures to disposable personal income fell from its customary prewar peacetime level of about 0.95[48] to 0.880 in 1941, 0.763 in 1942, 0.753 in 1943, 0.748 in 1944, and 0.809 in 1945.

Granted that wartime economic policy restricted consumption expenditures, the question remains why households added to holdings of cash rather than other liquid assets. The answer seems to be that households allocated their released funds broadly among all types of liquid assets. Life insurance reserves, commercial bank time deposits, savings and loan shares, postal savings—all these, as well as cash and savings bonds, increased substantially during the war. All that was necessary for declining velocity (as we have defined it) was that some, even a minor, part of the newly acquired assets consist of money. Such an outcome, of course, is to be expected on the basis of the theory of optimum income and wealth allocation, given the general stable pattern of asset yields. When these yields are taken net of taxes, as they should be, it is all the more understandable that households were content to build up their cash balances.

Assuming that the rise in consumer velocity during 1946–49 was mainly a reversal of the transitory wartime velocity movements, we are left with the somewhat puzzling phenomenon of a persistent rise in consumer velocity after 1949. Other things being equal, the income effect should have caused consumer velocity to fall in this period, since income per capita rose. Obviously, however, other things were not equal. The outbreak of the Korean War in June, 1950, led to increased purchases of consumer durables, because of anticipated price rises and shortages; consumer velocity therefore rose. Even more enduring forces were pushing consumer velocity upward after 1950: interest rates were rising, especially yields on savings and loan shares and other liquid assets; consumer credit was becoming increasingly available (after Regulation W lapsed early in 1952); and the marginal utility of precautionary balances had decreased. This last factor was a result of numerous social changes during the preceding decade, as well as the unexpected mildness of the 1948–49 recession,[49] and the growing realization after 1950 that the cold war would impart a buoyancy to the American economy for many years to come. It is also possible that consumer demand for money fell because households in this period came increasingly to believe in the inevitability of inflation. Let us examine these forces more closely.

The limited nature of the impact of the Korean War on consumer

48. It was 0.95 in 1929, 0.96 in 1939, and 0.945 in 1940.

49. See Milton Friedman in *Towards a Firmer Basis of Economic Policy.*

velocity is indicated by the behavior of consumption expenditures during 1950 and 1951. Purchases of consumer durables, seasonally adjusted, fell in the final quarter of 1950, after a sharp third-quarter increase. Although they increased again in the first quarter of 1951, in the second quarter of that year they were barely above the 1950 second-quarter figure; in the third and fourth quarters of 1951 these purchases were well below figures of a year earlier. Similarly, the ratio of total consumption expenditures to disposable income, after rising sharply in the first three quarters of 1950, fell even more sharply in the final quarter of the year. The ratio rose again in the first quarter of 1951 but once more reverted to low levels for the remainder of the year. In part these developments may be attributed to Regulation W, which was re-established on September 18, 1950, and remained in effect until May 7, 1952. In any case, it does not seem reasonable to attribute a significant part of the rise in consumer velocity after 1950 to the direct influence of the Korean War.

Whether or not inflationary expectations were responsible for an important part of the 1951–56 rise in consumer velocity is more difficult to determine. Inflation was inconsequential during most of the period: wholesale prices were either stable or declining from early 1951 to mid-1955, and the BLS Consumer Price Index changed little from mid-1952 to early 1956. Nevertheless, the mildness of the 1948–49 recession, together with the continuation of the cold war, apparently convinced many that deflation could not be expected for a long time to come and that long-run price-level movements were likely to be upward. The mild 1953–54 recession provided additional support for this view. It is noteworthy that yields on common stocks fell sharply, while bond yields edged upward, throughout the period, possibly indicating a growing concern about the future value of money. At the same time, however, it must be noted that household holdings of equities and tangible assets, which appreciate during inflation, grew no faster than holdings of fixed claims in this period.[50] Everything considered, inflationary expectations, while perhaps a contributing factor, do not seem to have been strong enough to account for a major part of the observed rise in consumer velocity during 1951–56.

Higher interest rates also may have been partly responsible for the rise in consumer velocity after 1950, but it is not at all clear which interest rates are most relevant to the consumer sector. The

50. Based on preliminary estimates by Raymond W. Goldsmith in a manuscript in preparation for the National Bureau of Economic Research series on postwar capital markets.

demand for money of high-income households and personal trusts may well be sensitive to yields on long-term tax-exempt securities and Treasury bills; that of high- and middle-income households, to yields on liquid fixed claims; and that of middle- and low-income households, to costs of consumer and mortgage credit. I know of no way to estimate the relative importance of changes in various kinds of interest rates. All interest rates increased during 1951–56, with the possible exception of rates on consumer instalment loans. Though the latter rates may not have risen, the volume of household debt increased enormously in these years, and the cost of credit became a determinant of the demand for money for a larger proportion of households. The fact that consumer velocity rose even in 1954 suggests that, for this sector, the volume of debt outstanding and the level of yields on fixed claims, both of which rose in that year, are more important velocity determinants than market rates of interest, which fell.

Finally, numerous other social changes that impinge on consumer velocity were taking place at accelerated rates throughout the postwar period. I have mentioned the reduced importance of precautionary balances to households. In part this reflects a reduction in the level of uncertainty (because of the diminishing volatility of personal incomes, for example) and in part the development of noncash buffers against uncertainty. Among the latter changes are the rise of medical and unemployment insurance and, more significantly, the increased availability of credit to households. Credit became more available because of federal government legislation in the residential mortgage field, the growth of credit life insurance, and the increased use of credit cards, to mention only a few of the changes in this area. It is also possible that the great expansion of household debt, most of it instalment debt, decreased the demand for money, for transactions purposes as well as for precautionary purposes, by shortening intervals between receipts and payments for households. Of course, all the velocity determinants mentioned in this paragraph were operating before 1951–56, the period we have been examining, and in some cases they were operating even before World War II. It is not obvious that they suddenly increased in importance after 1950.

We are left in the unsatisfactory predicament of being unable to choose among several plausible alternatives. One thing is clear, however: with the exception of real income per capita, all the factors

that appear to be relevant to the household demand for money were operating to increase consumer velocity after 1950. It is therefore not surprising that consumer velocity did rise during 1951–56, even though we cannot determine precisely why.

POSTWAR VELOCITY CHANGES IN OTHER SECTORS

The two sectors already analyzed have dominated postwar velocity movements, since they hold nearly two-thirds of the total money stock. Nevertheless, three other sectors, smaller in terms of money holdings, also merit brief attention.

The most important of the three is the non-corporate sector, which in recent years has held about one-sixth of all money. We saw in Chart 3 that non-corporate velocity closely resembled consumer velocity in its movements throughout 1939–56 and particularly after 1945. This is not surprising in view of the general lack of rigorous accounting separation between household and business or farm transactions and cash balances, together with the relatively simple decision-making structure within most farms and unincorporated enterprises. The considerably higher *level* of non-corporate velocity presumably results from the importance of high-velocity trading firms in this sector.[51]

Next in importance is the state and local sector. It seems likely that higher short-term interest rates have had an important impact on state and local velocity. Like their business counterparts, financial officers of these governments have discovered that the Treasury bill market affords opportunities for using temporary cash accumulations to supplement income. Higher bond yields undoubtedly have also had some effect on state and local velocity by causing officials to trim cash balances to the minimum in order to reduce high-cost borrowing.

Finally, there is the federal government sector, whose velocity has been influenced in an upward direction by the desire to avoid debt increases—not so much to minimize interest costs but rather as a basic article of political faith. The Eisenhower Administration, in particular, regarded any increase in the national debt as a major evil and recognized that the reduction in cash balances was a substitute for borrowing.

51. The 1957 income of unincorporated enterprises was $43,298,000, of which enterprises in wholesale and retail trade accounted for $11,987,000, or more than one-fourth (U.S. Department of Commerce, *U.S. Income and Output* [Washington, 1958], Table VI-4).

VI. Summary and Conclusion

SUMMARY OF FINDINGS

This study has pursued twin objectives: to discover the reasons for the postwar velocity rise and to develop a new dimension to velocity analysis. The objectives are not unrelated, of course; sectoral analysis of velocity offers several interesting pieces of information concerning the rise in aggregate velocity in recent years.

Many of the findings can best be summarized in a series of negative propositions. Some of these are well known and scarcely require extensive statistical documentation; others, however, have either been unexamined or untested prior to the present study.

1. The postwar velocity rise did not result from changes in the degree of business integration, the volume of financial payments relative to income payments, or changes in other variables that affect aggregate transactions velocity and income velocity differentially.

2. Velocity—undoubtedly the demand for money as well—is not the same in all sectors. It is higher in large cities than in small; in businesses than in the federal government, and in the federal government than in households; it is higher in trade than in manufacturing and in manufacturing than in the public utility sector; and, finally, it is higher in small than in large firms. Furthermore, cyclical variations in velocity differ by sector, being much more pronounced for businesses than for others.

3. The postwar velocity rise did not result from an increase in importance of sectors with relatively low demands for money. In fact, such structural changes as have occurred appear to have been velocity-reducing in nature.

4. The velocity rise was not confined to one or two major sectors; it was a very general phenomenon, taking place in every broadly defined sector and in all but a few of the more narrowly defined business sectors. However, the degree of rise has varied substantially from sector to sector. Taking 1939 as a prewar benchmark, we found that velocity increased most in large cities, the corporate and federal sectors, the manufacturing and public utility industries, and large firms.

5. The postwar velocity rise was not merely a "return to equilibrium" after the abnormalities of the war years. We found that a major part of the wartime velocity declines resulted from shifts in the ownership of cash, the growth in real income, and the associated

decline in the cost of holding money for small firms—changes that were permanent rather than transitory. That portion of the wartime decline that was transitory appears to have been fully reversed by about 1949.

6. Analyzing the velocity ratio in terms of its subratios—spending to assets and assets to cash—we found that the postwar rise in corporate velocity consisted not of a rise in the ratio of spending to assets—this ratio has been remarkably stable—but rather of a rise in the ratio of assets to cash.

7. The postwar rise in corporate velocity is not attributable to a shift from cash to government securities. In fact, non-financial corporate holdings of government securities in 1957 were smaller, relative to cash, than a decade earlier. The ratio of corporate spending to total liquidity (including non-cash liquid assets as well as cash) probably rose even faster than did corporate velocity.

8. We have failed to discover any clear evidence that the fear of inflation caused a flight from cash in the postwar period. Total fixed claims have grown much faster than cash alone, and at about the same rate as other assets.

These negative propositions add to our knowledge of postwar velocity movements, but they leave the basic question unanswered. Unfortunately, on the basis of existing data, it is not possible to explain with certainty why velocity rose during this period. It seems quite clear that the rising cost of holding money, as measured by the cost of borrowed funds, has been an important force responsible for higher velocity. Perhaps our key finding has been that velocity levels at a point in time and velocity changes over time have been functions of the size of cash holders; in large measure the industrial differences in postwar velocity behavior are simply reflections of their differential size structure. The importance of the cost of holding money as a determinant of these velocity differences according to size is suggested by several pieces of evidence: (1) the higher velocity level of small firms, which face higher borrowing costs than large firms; (2) the higher velocity level of deficit firms, which face higher borrowing costs than firms with net income; (3) the dramatic decline in small-firm velocity when business conditions improved sharply during the early war years; and (4) the much greater rise in large- than small-firm velocity after 1950, accompanied by a greater rise in interest rates on large than on small bank loans to businesses.

This last item (4) is not as easily attributable to the cost of hold-

ing money as are the other three. The fact that the cost of large bank loans rose more than that of small loans during 1950–57 does not seem to be sufficiently important to explain the much greater rise in velocity of large firms. It may well be, although there is no direct evidence of this, that small firms have been operating in a less elastic segment of the demand function for money in this period, so that even a general rise in borrowing costs (rather than the differential rise that took place) would have caused a greater rise in large- than in small-firm velocity.

IMPLICATIONS OF FINDINGS

In at least one important respect the findings of the present study are at odds with those of my earlier studies of velocity. In *Studies in the Quantity Theory of Money,* I concluded:

> The above findings offer little support to the hypothesis that velocity movements are mainly a result of changes in the cost of holding money. Whatever role the cost of holding money may have had during some periods of our history, it cannot account for the major velocity changes between 1919 and 1951.[52]

I now believe that this statement, based on a series of correlations of measures of aggregate velocity and assorted measures of the cost of holding money is incorrect. There were two main defects of the earlier study, as I now view it: (1) it did not include the most relevant concept of the cost of holding money—the cost of borrowed funds, as represented by interest rates on bank loans; and (2) it did not make use of sectoral analysis. In short, the cost of holding money was viewed strictly in terms of investment yields available to holders of cash, rather than in terms of direct reduction in interest expense (including cash discounts on trade credit) available to debtors who hold cash. The present study leads to the conclusion that the latter is a much more significant determinant of velocity than the former, and I would expect to find a strong relationship between bank rates on business loans and business velocity.

Another difference between this and my earlier analysis of velocity movements relates to the World War II period. In *Studies in the Quantity Theory of Money* I placed heavy emphasis on wartime controls as the reason for the substantial velocity decline. I continue to feel that economic policy was partly responsible for velocity movements during the war, but there is convincing evidence in the present study that velocity would have declined markedly even if

52. P. 205.

the early 1940's had been a peacetime period of comparable economic growth, price-level stability, and monetary ease.

As was indicated at the outset, the trend of income velocity had been downward for several decades prior to the end of World War II. The principal reason for this downtrend appears to have been the long-term rise in income per capita, aided perhaps by the generally declining trend of interest rates.[53]

The present sectoral analysis of velocity suggests the possibility that the secular decline did not occur uniformly in all sectors. If it is true that the income effect operates mainly on households, it may well be that the decline in aggregate velocity occurred largely in this sector. Such a development would imply a gradual increase in the household share of total cash, except insofar as offset by a decline in vertical integration of business activity.

In my judgment the income effect still operates much as before but has been swamped by other developments, such as the rising cost of holding money, the increased reliance of households on interest-bearing fixed claims as sources of liquidity, and increased use of consumer credit. Although some of these developments may well continue, it appears likely that they will be less important, relative to the income effect, than in the immediate past. By 1959, interest rates had approached levels comparable to those of the twenties; while there is no obvious reason why they cannot rise even more, substantial further rises seem most unlikely. Similarly, yields on money substitutes are probably close to their ceilings, and this source of rising velocity is likely to diminish in importance.

In the business sector we found that most of the velocity rise occurred among large firms and that, by 1957, these firms had nearly caught up with small firms. The fact that small-firm velocity did not rise much during a period of rising interest rates, coupled with the fact that small firms face higher borrowing costs at all times, has suggested that the demand function for money of large firms may become less elastic if interest rates continue to rise. Thus business velocity may have virtually reached a ceiling, regardless of a future trend to still higher interest rates.

In view of these considerations, it seems unlikely that aggregate velocity will long continue to rise at anywhere near its recent rate, and a resumption of the prewar secular decline would not be at all surprising. The rise in income velocity did slacken somewhat during

53. *Studies in the Quantity Theory of Money*, pp. 218–21. See also Friedman, *The Demand for Money, Some Theoretical and Empirical Results*, pp. 2–3.

1957–60, as compared with 1953–57—a 2.9 per cent annual growth rate in the later period, 3.4 per cent in the earlier period. However, it must be admitted that deposit turnover increased substantially in 1959 and 1960, remaining right on its 1946–58 trend.

The foregoing results, though inconclusive and exploratory, clearly indicate the value of sectoral analyses of velocity. Even within particular sectors the demand for money appears to be subject to a great many influences, which may operate dissimilarly in other sectors. The aggregate demand for money and hence aggregate velocity reflect not only changes that take place within sectors but also weight shifts and changes in the ratio of income payments to total payments. Because of the complexity of the forces impinging on aggregate velocity, it seems doubtful that a dependable and workable aggregate-velocity function exists, except during relatively short periods characterized by a stable economic structure. This does not mean that aggregate velocity cannot be studied or that velocity changes cannot be forecast. On the contrary, there is every reason to hope that, by disaggregating velocity, we can substantially improve our understanding of the behavior of money.

The least-known area in velocity studies is the household sector. Until some method is devised of investigating velocity differences among income, age, and other classes of households, we shall continue to be ignorant of major factors affecting the aggregate velocity of money. One way of approaching this problem would be to examine deposit turnovers in a sample of individual checking accounts and to gather income and other data from depositors by interview. The difficulties are obvious.

In the meantime, however, the data sources utilized above have by no means been exhausted, and in time new data will accumulate. Much progress can be expected from more intensive analyses along the lines indicated here.

APPENDIX TABLES

TABLE A-1

GROWTH RATES OF CORPORATE VELOCITIES, 1946–57

Industry	Growth Rate per Annum* (Per Cent)
All non-financial corporations	
Variant A†	3.2
Variant B†	3.5
Agriculture, forestry, and fishery	2.8
Mining and quarrying	3.0
Bituminous coal and lignite mining	2.5
Crude petroleum and natural gas	5.7
Metal mining	6.6
Non-metallic mining and quarrying	1.1
Construction	2.1
Manufacturing	3.5
Apparel and products made from fabrics	2.2
Beverages	0.2
Chemicals and allied products	
Variant A†	3.3
Variant B†	3.7
Electrical machinery	6.4
Fabricated metal products (1949–56)	5.5
Food and kindred products	0.4
Furniture and fixtures	1.8
Leather and products	1.9
Lumber and wood products (excl. furniture)	3.1
Machinery (excl. transp. equip. and electrical)	2.6
Motor vehicles and equip. (excl. elect.)	
Variant A†	11.4
Motor vehicles and equip., variant B†	11.5
Paper and allied products	1.7
Petroleum and coal products	4.9
Primary metals (1949–56)	4.5
Printing, publishing, and allied industries	1.6
Rubber products	4.4
Scientific instruments (1949–56)	5.6
Stone, clay, and glass	1.2
Textile-mill products	4.0
Transportation equip. (excl. motor vehicles)	11.1
Public utilities	4.7
Communication	5.5
Electric and gas utilities (1949–56)	6.3
Other public utilities (1949–56)	2.8
Transportation	
Variant A†	2.9
Variant B†	3.4

* Average growth rates computed by fitting linear regressions to logarithms of velocities.

† Variant A ratios exclude depreciation, amortization, and depletion from the numerator; variant B includes these items.

TABLE A-1—*Continued*

Industry	Growth Rate per Annum* (Per Cent)
Trade	2.8
Wholesale trade	2.2
Commission merchants	4.4
Other wholesalers	2.0
Retail trade	3.7
Apparel and accessories	2.5
Automotive dealers and filling stations	13.1
Building materials and hardware	3.3
Drugstores	1.7
Eating and drinking places	0.4
Furniture and house furnishings	0.5
Retail food trade	
Variant A†	− 0.3
Variant B†	− 0.4
Other retail trade	1.7
Services	1.0
Automotive repair services and garages	− 1.6
Business services	− 0.1
Hotels and other lodging places	2.0
Personal services	− 0.5

TABLE A-2

GROWTH RATES OF SELECTED INDUSTRY VELOCITIES 1946–57, BY ASSET-SIZE CLASS*

ASSET-SIZE CLASS†	GROWTH RATE PER ANNUM				
	Chemical and Allied Products	Motor Vehicles and Equipment	Transportation	Retail Food Trade	All Non-financial Corporations
1	2.8	‡	0.9	+2.0	2.8
2	0.5	+ 5.2	2.9	+2.5	2.7
3	1.9	+ 2.2	0.5	+1.4	2.8
4	0.4	+ 4.0	1.8	+0.5	3.3
5	1.8	+ 1.4	2.9	+0.4	2.6
6	0.8	+ 1.5	6.3	−0.2	2.2
7	0.8	+ 1.8	6.4	−4.3	2.3
8	2.4	+ 2.1	4.5	−2.6	2.6
9	0.7	− 3.3	1.3	−0.6	3.3
10	7.0	+14.6	3.0	+0.5	5.9

* As obtained by variant B; see Table A-1.

† For identity of size classes, see note to Chart 6.

‡ "Under $50,000" size class omitted because of inadequate data.

TABLE A-3

FOUR MEASURES OF AGGREGATE MONETARY VELOCITY IN THE UNITED STATES, 1919–58

Year	Demand Deposit Turnover Rate*	Non-financial Velocity†	Income Velocity (Excl. Time Deposits)‡	Friedman-Schwartz Income Velocity Series§
1919	35.0	.....	3.90	2.303
1920	35.4	.....	4.04	2.218
1921	32.6	.....	3.34	1.910
1922	34.2	.....	3.39	1.897
1923	34.1	.....	3.82	2.056
1924	34.4	.....	3.62	1.982
1925	36.3	.....	3.56	1.899
1926	37.7	.....	3.78	1.966
1927	41.0	.....	3.69	1.887
1928	46.8	.....	3.68	1.858
1929	53.6	.....	3.92	1.966
1930	40.4	.....	3.56	1.713
1931	33.2	.....	3.22	1.484
1932	27.3	.....	2.68	1.289
1933	26.8	.....	2.67	1.387
1934	26.3	.....	2.67	1.519
1935	24.9	.....	2.48	1.526
1936	24.7	.....	2.60	1.598
1937	24.7	.....	2.79	1.670
1938	21.6	.....	2.55	1.534
1939	20.2	9.0	2.51	1.522
1940	18.5	8.8	2.46	1.509
1941	19.4	9.4	2.64	1.610
1942	18.4	8.6	2.57	1.835
1943	17.5	7.9	2.36	1.767
1944	17.8	6.9	2.08	1.613
1945	17.6	5.9	1.78	1.374
1946	18.2	6.5	1.71	1.163
1947	18.8	8.0	2.01	1.245
1948	20.5	8.6	2.22	1.326
1949	20.1	8.5	2.21	1.280
1950	22.0	9.5	2.38	1.441
1951	23.0	10.2	2.61	1.540
1952	23.6	10.2	2.61	1.513
1953	24.6	10.4	2.69	1.529
1954	26.2	9.9	2.63	1.503
1955	27.2	10.9	2.80	1.596
1956	28.9	11.5	2.91	1.645
1957	30.8	.....	3.05	1.669
1958	31.5	.....	2.99	1.603

* *Demand deposit turnover rate.* The 1919–41 period, annual turnover rate of demand deposits, all commercial banks (*Banking and Monetary Statistics*, Table 55); 1942 is an average of 1941 and 1943 figures. The 1943–58 data are the ratio of debits at all reporting centers to average demand deposits at these centers; the latter was obtained by dividing turnover rates for the categories "New York City," "six other centers," and "other centers" into their respective debits and summing the resulting deposit figures.

† *Non-financial velocity.* Numerator: total non-financial uses of all sectors (less those for "banking" and "rest of the world"); 1939–49 figures obtained from Board of Governors of the Federal Reserve System, *Flow of Funds in the United States, 1939–1953* (Washington, 1955), pp. 24–34; 1950–53 figures from *Federal Reserve Bulletin*, April, 1957, pp. 376–81; 1954–56, from *Federal Reserve Bulletin*, October, 1957, pp. 1190–92.

Denominator: averages of beginning- and end-of-year demand deposits plus currency, all sectors (excluding "banking" and "rest of the world"); 1939–49 data from *Flow of Funds*, Table 73B, line *a* minus line *s*, less total time deposits (from Federal Reserve worksheets); 1950–56, from Board of Governors of the Federal Reserve System, "Flow of Funds Sector and Transaction Accounts" (Washington, 1957), mimeographed, Table 73-1, B, line *a* minus line *t*.

‡ *Income velocity (excl. time deposits).* Numerator: GNP, 1919–28, Kuznets' estimates, taken from R. W. Goldsmith, *A Study of Saving* (Princeton, 1956), III, 427, col. (1), multi-

[Notes to Table A-3 continued at bottom of page 538]

TABLE A-4*

Demand Deposit Turnover Rates, by Geographic Sectors, 1943–58, and Percentage Distribution of Demand Deposits

Year	Demand Deposit Turnover Rates			Percentage Distribution of Deposits		
	New York City	Six Other Centers	Other Centers	New York City	Six Other Centers	Other Centers
1943	20.4	18.0	15.3	31.9	22.6	45.5
1944	22.3	18.3	14.6	30.8	22.3	46.9
1945	24.1	17.5	13.5	30.2	21.7	48.1
1946	25.1	18.3	14.1	29.0	21.3	49.7
1947	23.8	19.7	15.5	28.4	21.3	50.3
1948	26.9	21.6	16.6	27.5	20.9	51.6
1949	27.9	20.9	15.9	26.7	20.8	52.4
1950	31.1	22.6	17.2	26.1	21.0	52.9
1951	31.9	24.0	18.4	25.5	20.9	53.6
1952	34.4	24.1	18.4	24.9	20.8	54.2
1953	36.7	25.6	18.9	24.1	21.1	54.8
1954	42.3	25.8	19.2	24.2	21.0	54.8
1955	42.7	27.3	20.4	23.9	21.0	55.1
1956	45.8	28.8	21.8	23.4	21.1	55.5
1957	49.5	30.4	23.0	23.4	21.0	55.6
1958	53.6	30.0	22.9	23.1	21.0	56.0

* Source: *Federal Reserve Bulletin*, various issues.

[Notes to Table A-3–*Continued*]

plied by 1.0058 to achieve comparability with subsequent estimates. For 1929–54, figures obtained from Department of Commerce, *National Income* (Washington, 1954), Table 2, l. 1; 1955–57, from *Survey of Current Business*, July, 1958, Table 2, l. 1; 1958, from *Survey of Current Business*, February, 1959, p. 3.

Denominator: sum of demand deposits adjusted, currency outside banks, United States government deposits at all banks, and Treasury cash holdings. For 1919–22, figures are averages of beginning- and end-of-year estimates, each in turn being an average of preceding and succeeding June 30 figures as given in Board of Governors of the Federal Reserve System, *Banking and Monetary Statistics*, Table 9; foreign deposits, assumed to be $400 million, were deducted from the foregoing throughout the period 1919–29; end-of-year Treasury cash and Treasury deposits at Federal Reserve banks were taken from *ibid.*, Table 104; for 1923–25, figures are averages of beginning- and end-of-year estimates, *ibid.*; 1936–45 figures are averages of beginning- and end-of-year total money less time and foreign deposits, obtained from *Federal Reserve Bulletin*, January, 1948, p. 28; 1946–58, same as preceding, various issues of *Federal Reserve Bulletin*.

§ *Friedman-Schwartz income velocity series.* Friedman, *The Demand for Money; Some Theoretical and Empirical Results*, Table 1.

TABLE A-5*

Flow-of-Funds Sector Velocities, 1939–56

Year	Consumer	Consumer (Excl. Withheld Taxes)	Corporate Business	Federal Government	Insurance	Noncorporate Business	Other Investors	State and Local Government
1939	6.9	6.8	13.6	4.3	5.0	11.6	2.5	4.4
1940	6.4	6.4	13.0	5.9	3.9	11.0	2.2	4.2
1941	6.2	6.1	14.7	9.3	4.1	11.3	2.3	3.7
1942	5.2	5.1	13.8	9.5	4.7	10.6	2.2	3.4
1943	4.8	4.5	12.6	8.7	4.7	8.8	2.2	3.1
1944	4.1	3.8	12.1	6.2	5.1	7.9	2.0	3.0
1945	3.8	3.5	12.0	3.8	5.9	7.3	1.8	3.0
1946	4.2	3.9	13.9	3.2	6.4	7.7	1.9	3.1
1947	4.5	4.3	15.8	10.4	5.8	8.6	2.1	3.3
1948	4.9	4.6	16.7	9.4	5.8	9.6	2.4	3.7
1949	5.1	4.8	15.3	9.5	6.2	9.8	2.5	4.1
1950	5.7	5.4	16.9	9.5	7.8	10.6	2.9	4.3
1951	6.1	5.6	18.1	12.8	8.2	11.1	2.9	4.3
1952	6.2	5.7	17.8	13.1	8.5	11.3	2.8	4.3
1953	6.3	5.8	18.3	13.7	8.6	12.0	2.6	4.3
1954	6.4	5.9	17.4	13.8	9.3	12.2	2.7	4.6
1955	7.0	6.4	18.2	13.8	10.1	13.0	2.6	4.7
1956	7.3	6.7	19.3	14.4	10.3	13.4	2.8	5.0

* In general, methods of computation and sources used are those indicated in Table A-3. For 1939–49, no estimates of demand deposits and currency by sectors were directly available at the time the computations were carried out. However, sector time deposit holdings from Federal Reserve worksheets were deducted from total money figures in *Flow of Funds* to obtain the desired data. These sectoral estimates of demand deposits plus currency differ substantially from those presented in the *Federal Reserve Bulletin*, August, 1959, pp. 1057–62. Since the differences appear to be mainly conceptual (i.e., the result of a change in the basis of sectoring the economy), there seemed to be no clear advantage in using the later estimates.

TABLE A-6*

Percentage Distribution of Money, Flow-of-Funds Sectors, 1939–56

Year	Consumer	Corporate Business	Federal Government	Insurance	Non-corporate Business	Other Investors	State and Local Government
1939	31.5	28.5	7.1	3.6	16.6	3.6	9.2
1940	32.4	29.5	4.7	4.2	16.8	3.7	8.7
1941	33.6	29.0	5.4	3.6	16.6	3.4	8.4
1942	33.7	26.2	11.9	2.4	16.1	2.8	7.0
1943	33.4	25.0	15.0	1.8	16.7	2.4	5.8
1944	33.8	22.4	18.5	1.5	16.8	2.3	4.8
1945	34.2	18.9	21.9	1.1	17.0	2.5	4.4
1946	38.3	19.3	13.9	1.2	19.3	2.8	5.1
1947	42.3	22.1	3.8	1.7	20.8	3.1	6.2
1948	41.5	22.9	4.1	1.9	19.8	3.2	6.7
1949	40.2	23.8	4.8	1.9	19.0	3.4	7.0
1950	39.2	24.8	4.8	2.0	18.7	3.2	7.2
1951	38.7	25.3	4.5	2.1	18.6	3.4	7.4
1952	38.8	25.0	5.0	2.2	18.1	3.6	7.4
1953	39.4	24.8	5.1	2.3	17.0	3.9	7.7
1954	39.0	25.5	4.7	2.3	16.5	4.2	7.9
1955	38.2	26.0	4.6	2.2	16.4	4.5	8.0
1956	37.9	26.1	4.5	2.3	16.3	4.7	8.2

* Source: See notes to Tables A-3 and A-5.

TABLE A-7*

SECTOR VELOCITIES BY MAJOR INDUSTRY DIVISIONS, 1931–57

Year	All Non-financial Corporations	Agriculture, Forestry, and Fishery	Construction	Manufacturing	Mining and Quarrying	Public Utility	Service	Trade
1931	14.28	8.51	13.35	12.23	9.53	9.76	16.36	28.17
1932	11.24	7.98	10.69	9.38	6.79	8.13	13.57	21.81
1933	12.57	6.66	10.57	11.34	7.62	7.75	13.57	24.33
1934	14.42	8.69	11.17	13.25	8.31	8.11	13.29	26.02
1935	15.26	7.28	11.50	13.72	7.54	8.99	12.29	28.87
1936	16.15	8.26	15.40	15.64	7.95	7.68	11.73	31.01
1937	19.38	9.62	16.57	18.66	9.15	10.95	12.65	34.36
1938	13.73	9.44	13.33	12.00	7.37	8.04	13.96	25.68
1939	13.92	11.51	14.48	12.26	6.29	7.75	13.08	27.81
1940	12.87	9.77	15.08	11.23	6.03	6.92	11.78	27.23
1941	15.56	9.88	17.03	14.79	7.13	7.32	12.52	29.63
1942	12.66	8.60	14.45	12.66	6.86	6.60	10.35	19.77
1943	11.61	6.65	12.84	11.84	6.34	6.07	8.95	17.69
1944	12.19	7.20	11.63	12.28	6.83	7.58	9.43	16.97
1945	11.87	7.51	11.11	11.91	6.44	7.46	8.39	16.50
1946	13.50	8.36	13.35	12.42	6.07	7.61	9.01	22.37
1947	15.37	10.54	16.46	14.59	6.62	8.38	9.68	23.70
1948	16.74	10.63	16.81	16.18	7.05	9.40	9.94	25.02
1949	15.08	10.45	13.34	13.87	6.85	9.03	9.69	23.79
1950	17.02	11.15	16.71	15.86	7.29	9.14	9.80	27.66
1951	18.08	12.46	17.38	17.23	8.34	10.56	10.24	27.45
1952	17.71	12.46	15.92	17.01	8.78	10.02	10.15	27.15
1953	18.49	11.65	15.77	18.14	8.94	11.29	10.03	26.78
1954	16.94	11.01	15.81	15.94	6.95	10.53	9.46	26.72
1955	19.31	11.56	18.08	18.15	7.62	11.97	10.28	30.14
1956	20.62	12.97	19.27	19.75	9.03	13.07	10.68	30.96
1957	21.64	14.91	18.63	20.87	9.64	13.84	11.04	32.29

* Source: Computed from *Statistics of Income*. The computation may be described by using the year 1954 as an example (all data from Table 4, pp. 41–51). Numerator: total compiled deductions (l. 63) plus total tax (l. 69) plus cash dividends (l. 71) plus change in inventories (l. 5, current year minus preceding year) minus depreciation, depletion, and amortization (ll. 56 and 57). Denominator: currency plus bank deposits (l. 2).

TABLE A-8*

PERCENTAGE DISTRIBUTION OF MONEY, MAJOR INDUSTRY DIVISIONS, 1931–57

Year	Agriculture, Forestry, and Fishery	Construction	Manufacturing	Mining and Quarrying	Public Utility	Service	Trade
1931	0.9	2.4	53.2	3.7	20.5	3.2	15.9
1932	0.8	2.1	52.8	3.7	20.5	3.6	16.4
1933	1.0	1.7	51.5	4.3	21.6	3.4	16.5
1934	1.1	1.8	48.0	4.2	20.9	3.9	20.0
1935	1.1	1.8	50.7	4.4	18.5	4.3	19.0
1936	1.1	1.7	48.7	4.4	20.7	5.0	18.2
1937	1.2	2.1	49.3	5.0	17.7	5.3	19.3
1938	0.7	1.8	52.3	4.1	18.9	3.1	19.0
1939	0.6	1.7	53.5	4.8	18.5	3.1	17.6
1940	0.6	1.5	55.7	4.7	17.9	2.9	16.3
1941	0.6	1.7	54.9	4.3	18.1	2.8	17.2
1942	0.5	2.0	58.1	3.4	15.8	2.6	17.2
1943	0.6	1.6	60.1	2.6	16.0	2.7	16.1
1944	0.6	1.3	60.7	2.7	13.8	2.8	17.9
1945	0.6	1.3	57.5	2.8	14.0	3.4	20.1
1946	0.7	1.6	54.9	3.2	14.2	3.8	21.4
1947	0.7	1.9	53.9	3.6	13.2	3.7	22.9
1948	0.7	2.3	52.4	4.3	12.8	3.7	23.7
1949	0.7	3.0	53.8	3.7	12.2	3.6	22.8
1950	0.7	2.7	53.7	4.1	12.8	3.7	22.3
1951	0.7	2 9	54.4	3.9	11.9	3.6	22.4
1952	0.7	3.3	53.8	3.5	12.8	3.8	22.0
1953	0.7	3.5	53.9	3.3	11.9	4.0	22.5
1954	0.7	3.7	53.7	3.6	12.5	4.2	21.6
1955	0.7	3.5	53.2	3.7	12.0	4.3	22.5
1956	0.7	3.9	51.7	3.6	12.1	4.8	23.1
1957	0.6	4.7	50.4	3.5	12.2	5.0	23.4

* Source: See note to Table A-7.

TABLE A-9*

CORPORATE VELOCITIES, SELECTED MAJOR INDUSTRY GROUPS, 1946–56

Major Industry Groups	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
Manufacturing:											
Apparel and fabrics	19.12	20.19	20.68	17.91	27.19	23.50	22.07	22.63	20.78	24.89	24.58
Beverages	16.69	17.88	18.58	19.67	20.40	22.79	20.37	20.96	18.02	16.50	18.34
Chemicals and allied products	9.66	11.70	13.39	10.30	11.90	12.10	12.56	13.32	12.54	14.07	16.00
Electrical machinery	12.00	13.41	14.98	12.63	15.83	19.29	19.72	22.09	17.28	20.81	23.45
Fabricated metal products	.....	.....	.....	11.28	13.93	14.73	14.81	16.30	13.97	17.46	18.48
Food and kindred products	22.59	30.32	30.43	27.91	30.74	32.63	31.15	30.23	29.27	29.62	30.52
Furniture and fixtures	18.18	18.99	16.96	15.46	22.21	19.99	18.58	19.48	18.33	21.91	21.58
Leather and products	16.27	19.48	19.88	19.18	26.96	21.44	19.33	23.20	19.32	21.82	22.47
Lumber and wood products	11.22	12.89	17.43	14.31	14.57	16.38	16.98	16.93	14.10	16.68	18.55
Machinery except transportation and electrical	11.15	12.52	12.75	9.53	12.14	14.44	13.59	13.59	11.28	14.07	16.35
Motor vehicles	8.18	11.00	15.07	13.93	17.48	18.26	18.20	25.40	20.64	29.33	26.03
Paper and allied products	11.52	13.65	15.52	12.15	12.80	14.10	13.11	14.00	13.41	13.41	17.22
Petroleum and coal products	10.26	12.27	14.75	13.50	14.11	16.78	16.52	17.51	15.43	17.31	18.80
Primary metals	.....	.....	.....	11.89	12.41	14.00	13.85	15.80	12.87	15.64	17.49
Printing, publishing, etc.	9.67	10.84	12.10	11.58	12.22	11.94	11.81	11.94	11.37	11.71	13.33
Rubber products	18.03	16.00	20.96	15.24	17.20	20.86	20.78	22.05	21.13	26.00	25.85
Scientific instruments	.....	.....	.....	11.74	14.68	18.74	17.76	18.66	15.14	18.42	20.85
Stone, clay, and glass	9.93	12.42	12.27	10.07	11.01	12.62	12.00	12.66	10.77	12.35	12.65
Textile mill products	13.34	12.94	14.79	13.90	17.11	18.07	17.15	16.59	16.71	18.40	20.70
Transportation equipment except motor vehicles	6.69	10.54	10.98	9.97	11.39	15.69	18.78	19.79	16.14	19.57	21.39
Mining and quarrying:											
Bituminus coal and lignite	9.07	9.53	9.69	8.84	10.74	11.26	12.26	11.09	9.66	10.70	12.55
Crude petroleum and natural gas	4.48	4.75	5.59	6.01	6.47	7.75	7.96	8.28	7.05	7.28	7.89
Metal mining	3.78	4.44	5.04	5.08	4.73	6.03	6.60	8.60	4.92	6.48	8.84
Non-metallic mining and quarrying	5.64	7.05	8.04	7.11	7.27	7.86	8.42	7.36	6.28	6.92	8.01

* Source: Computed from *Statistics of Income*. See note to Table A-7.

* Source: Computed from *Statistics of Income*. See note to Table A-7.

TABLE A-9—*Continued*

Major Industry Groups	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
Public utility:											
Communication	16.80	16.31	17.47	19.03	19.31	21.16	21.83	20.98	25.86	25.90	28.05
Electrical and gas utilities	.....	.....	.....	7.12	7.66	9.34	8.65	9.66	8.78	10.59	11.91
Other public utilities	.....	.....	.....	3.77	5.42	5.78	5.82	5.50	4.62	4.88	6.31
Transportation	7.88	8.29	9.35	9.07	8.81	10.01	9.44	10.87	9.35	10.58	11.25
Service:											
Automotive repair service and garages	12.10	13.39	12.60	10.93	12.48	13.51	10.87	11.83	11.28	10.29	11.26
Business services	9.93	10.21	9.97	9.72	9.38	9.58	9.86	9.71	9.23	9.95	10.21
Hotels and other lodging places	8.85	9.08	10.19	9.77	10.56	10.50	10.73	10.55	11.28	9.47	11.92
Personal services	14.16	16.68	17.90	16.38	18.86	17.32	14.88	15.96	13.91	15.72	16.45
Trade, retail:											
Total	18.94	20.23	20.48	20.72	23.62	23.22	23.63	23.90	23.54	27.82	28.29
Apparel and accessories	14.97	16.01	16.12	16.16	18.00	17.75	18.58	19.07	17.51	18.45	20.57
Automotive dealers and filling stations	13.41	14.99	18.50	21.76	24.11	27.64	26.10	34.81	32.37	48.33	45.83
Building materials and hardware	15.25	22.91	24.42	21.69	29.54	27.18	25.03	23.99	28.86	23.80	26.90
Drug stores	18.46	19.18	20.21	19.42	23.49	19.80	21.54	22.85	21.51	21.33	22.51
Eating and drinking places	18.84	20.21	20.05	18.86	21.67	21.64	20.67	20.54	19.48	18.59	21.59
Food stores	29.81	36.07	36.35	33.61	36.85	35.87	33.24	33.16	31.54	31.92	33.60
Furniture and house furnishings	21.56	24.97	25.65	23.66	30.46	22.56	24.75	24.08	21.36	25.60	26.98
Other	17.63	21.74	25.67	20.92	25.63	23.43	22.28	23.45	23.61	22.65	25.67
Trade, wholesale:											
Total	26.28	27.23	30.14	27.55	32.23	31.97	31.28	30.51	31.03	33.23	34.51
Commission merchants	9.89	10.88	12.43	11.91	12.86	11.89	13.36	10.41	14.51	15.51	18.19
Other	28.83	29.97	32.94	29.87	35.09	35.09	33.93	33.86	33.07	35.84	37.05

TABLE A-10*

Size-Class Velocities, Non-financial Corporations 1939, 1941, 1943, and 1946–57

Year	All Non-financial Corporations	Size Classes†									
		1	2	3	4	5	6	7	8	9	10
1939	14.32	34.42	30.28	26.94	24.12	20.00	15.75	12.52	11.08	9.72	9.48
1941	15.91	32.06	30.10	27.76	25.20	21.61	17.90	14.51	13.60	10.48	11.55
1943	11.85	17.83	15.90	15.58	15.47	14.71	13.56	10.97	10.71	10.37	10.08
1946	13.73	17.34	17.09	17.60	18.05	18.01	15.64	13.67	12.30	11.28	10.60
1947	15.64	20.05	19.33	19.55	19.39	18.76	16.92	14.90	14.29	13.14	13.22
1948	17.06	22.66	21.43	21.63	20.90	19.78	17.70	16.58	15.30	14.25	15.02
1949	14.45	17.94	17.87	18.52	17.73	16.35	14.38	12.95	13.48	12.30	13.50
1950	17.59	25.01	24.15	24.55	23.82	21.77	18.70	16.86	15.38	15.11	14.72
1951	18.47	24.43	23.71	23.93	23.71	21.32	18.67	17.56	15.85	14.79	17.36
1952	18.13	23.35	21.38	22.16	22.57	20.35	18.16	16.78	15.77	15.43	17.47
1953	18.97	23.65	22.69	23.09	22.94	20.93	18.36	16.06	16.05	16.63	19.24
1954	17.44	23.42	22.21	22.55	22.32	20.14	17.18	15.32	14.71	13.97	16.89
1955	19.95	23.87	22.72	24.46	25.61	23.78	19.65	17.26	16.43	15.88	19.75
1956	21.27	24.41	24.51	24.67	25.62	23.80	20.75	19.11	18.24	17.87	21.30
1957	22.34	26.12	24.34	25.12	25.97	24.13	21.60	19.06	18.14	20.86	23.19

* Source: Taking the year 1954 as an example, ratios were obtained from tabulations by asset classes in *Statistics of Income*, Part 2, Table 6. Numerator: total compiled receipts minus compiled net profit or net loss plus dividends paid in cash plus change in inventories from preceding year. Denominator: total deposits plus currency. The ratios so derived differ from those in Tables A-7 and A-9 in that they fail to exclude depreciation, amortization, and depletion from the numerator. In Table A-1, velocities designated "Variant A" exclude these items, while "Variant B" velocities include them. The velocities obtained through these two methods are nearly identical in most years.

† See note to Chart 6 for identity of size classes.

TABLE A-11*

Percentage Distribution of Money, Non-financial Corporations by Size Classes, 1946–57

Year	Size Classes†									
	1	2	3	4	5	6	7	8	9	10
1939	3.2	2.6	4.8	4.4	5.2	14.8	6.9	18.7	8.5	30.8
1941	2.7	2.3	4.7	4.5	5.4	15.1	7.4	18.2	9.5	30.1
1943	2.5	2.4	4.7	4.6	5.3	14.1	7.3	16.8	7.7	34.6
1946	3.0	3.4	6.6	6.0	6.4	15.7	7.1	15.7	6.7	29.4
1947	2.7	3.2	6.8	6.2	6.7	15.7	7.3	15.4	7.0	29.0
1948	2.5	3.1	6.7	6.3	6.7	15.7	7.1	15.1	6.9	29.9
1949	1.7	2.7	6.2	6.0	6.5	16.1	7.0	15.4	7.6	30.9
1950	2.0	2.5	5.8	5.7	6.3	15.7	6.6	16.2	6.8	32.5
1951	2.1	2.5	5.9	5.7	6.5	15.8	6.6	16.2	6.8	32.0
1952	2.1	2.7	6.2	5.7	6.5	15.5	6.7	15.4	6.6	32.5
1953	2.2	2.7	6.2	5.7	6.4	15.4	6.9	15.4	6.6	32.5
1954	2.1	2.6	6.1	5.9	6.3	15.5	6.7	15.0	6.9	32.8
1955	2.2	2.8	6.4	6.1	6.6	15.9	6.4	14.4	6.2	33.0
1956	2.4	2.9	7.0	6.3	6.6	14.9	6.3	14.2	6.3	33.2
1957	2.4	3.1	7.0	6.6	6.8	14.9	6.3	13.8	6.3	32.8

* Source: Computed from *Statistics of Income*. See note to Table A-10.

† See note to Chart 6 for identity of size classes.

TABLE A-12*

SIZE-CLASS VELOCITIES, SELECTED MAJOR INDUSTRY GROUPS, 1946–56

YEAR	ALL CLASSES†	SIZE CLASSES									
		1	2	3	4	5	6	7	8	9	10
	Chemicals and Allied Products										
1946..	9.83	14.86	16.88	15.04	15.29	13.24	12.29	11.55	9.47	10.58	7.32
1947..	11.91	16.43	15.80	15.78	16.50	14.12	13.55	14.17	10.74	9.61	11.50
1948..	13.68	15.43	16.56	18.04	18.10	16.05	14.26	12.70	12.25	14.46	13.08
1949..	10.58	16.43	16.44	14.56	14.43	11.89	12.58	10.49	10.55	10.04	9.51
1950..	12.19	20.80	17.38	18.91	17.31	15.83	14.31	12.61	11.22	10.19	11.65
1951..	12.42	18.83	18.33	19.00	19.83	15.73	14.68	12.84	11.34	11.23	11.67
1952..	12.99	23.40	16.50	16.37	18.16	15.60	13.56	13.00	12.37	12.21	12.56
1953..	13.84	22.00	16.33	16.32	15.50	15.13	13.10	12.88	11.93	11.08	15.16
1954..	13.12	19.83	13.91	17.07	16.91	15.83	13.53	10.57	11.91	10.24	14.10
1955..	14.74	15.43	16.00	17.48	16.49	15.66	13.55	12.62	11.72	11.18	16.84
1956..	16.76	21.40	20.70	21.19	16.58	16.59	14.89	15.38	14.21	12.33	18.78
	Motor Vehicles and Equipment										
1946..	8.31	14.00	22.00	21.23	20.75	20.50	18.71	12.63	13.72	10.53	6.77
1947..	11.15	19.00	15.00	23.68	20.40	18.33	16.76	19.11	13.46	16.14	9.62
1948..	15.27	23.00	21.00	29.77	22.67	25.14	16.80	22.65	14.57	17.98	14.58
1949..	14.12	25.00	29.00	23.09	16.00	12.64	12.03	12.86	9.04	14.64	14.79
1950..	17.68	14.00	33.00	29.44	25.60	18.78	15.96	20.18	13.54	13.31	18.37
1951..	18.49	18.00	32.00	24.00	23.33	23.38	20.19	15.19	15.11	17.74	18.81
1952..	18.47	.....	16.00	20.03	18.60	18.92	18.94	15.26	16.01	8.34	20.54
1953..	25.79	.....	40.00	33.46	28.75	21.50	16.11	18.05	13.46	13.18	28.94
1954..	21.12	23.00	27.00	32.08	24.80	17.83	12.68	15.30	10.16	14.90	23.98
1955..	29.90	.....	38.00	29.94	26.50	24.73	21.29	21.27	16.10	9.79	33.08
1956..	26.76	22.00	28.00	25.33	31.60	21.73	22.00	19.94	19.33	9.71	28.02
	Transportation										
1946..	8.14	13.28	12.04	12.51	10.70	10.58	5.91	4.93	5.27	7.17	9.07
1947..	8.64	16.61	14.54	13.54	12.23	11.52	7.55	6.94	6.78	7.34	8.85
1948..	9.77	18.09	14.72	13.92	13.78	10.64	8.84	7.29	7.27	8.94	10.15
1949..	9.55	17.79	13.96	13.52	12.90	11.74	8.84	6.57	7.21	8.40	9.88
1950..	9.26	17.88	14.48	14.19	13.02	12.01	9.69	7.04	6.93	9.41	8.94
1951..	10.56	16.81	14.67	14.04	14.33	12.88	10.38	9.01	7.47	11.11	10.64
1952..	10.03	18.15	14.48	14.35	16.29	12.94	10.53	7.75	8.07	10.07	9.60
1953..	11.63	17.41	16.09	13.51	14.64	13.83	12.07	9.88	9.16	9.68	11.80
1954..	10.10	16.62	15.59	13.63	12.97	14.03	10.58	9.09	8.60	8.98	9.61
1955..	11.44	16.85	17.16	13.07	14.40	14.05	11.98	9.70	8.77	8.14	11.76
1956..	12.14	16.79	17.97	14.65	13.14	13.33	12.13	10.69	8.94	8.22	13.09
	Retail Food Trade										
1946..	29.95	31.92	30.44	32.46	31.08	34.07	32.49	33.12	31.72	33.38	25.31
1947..	36.26	45.80	36.88	43.38	38.15	39.18	34.89	38.78	33.05	35.61	35.41
1948..	36.55	47.27	41.33	41.73	45.69	39.92	34.60	39.62	36.12	34.95	33.88
1949..	33.84	47.27	41.33	38.24	35.65	35.50	30.36	27.87	30.66	38.53	34.72
1950..	37.75	52.90	50.38	47.07	41.50	41.25	37.53	26.86	31.43	43.53	37.48
1951..	36.11	51.08	43.55	48.67	43.53	43.79	34.78	29.50	35.02	26.42	36.06
1952..	33.47	44.87	46.50	44.88	39.90	42.33	33.89	28.56	29.60	30.93	31.55
1953..	33.40	48.17	41.00	42.92	40.33	43.04	33.00	26.20	27.60	32.55	33.37
1954..	31.79	48.08	43.14	41.47	37.26	38.26	29.64	25.28	26.65	31.47	31.97
1955..	32.20	49.86	41.12	41.66	37.79	37.77	33.83	24.81	25.15	30.37	32.10
1956..	33.91	47.19	47.94	44.51	38.27	35.84	34.21	23.73	28.25	40.19	32.93

* Source: Computed from *Statistics of Income*. See note to Table A-10.

† See note to Chart 6 for identity of size classes.

MONETARY POLICY AND THE FORWARD EXCHANGE MARKET

JOHN H. AUTEN*
Rice University

THIS PAPER examines the extent to which our monetary authorities might operate to good advantage in the forward exchange market. The central thesis is that appropriate official forward intervention assists in the reconciliation of conflicts between internal and external balance. Within limits, the monetary authorities, through their influence on the forward exchange rate, can establish two short-term rates of interest. One rate applies to foreign lenders, the other to domestic lenders. As a consequence, monetary ease at home can proceed without encouraging the withdrawal of short-term money sensitive to international yield differentials. On the other hand, monetary restraint can be practiced without attracting short-term money from abroad and possibly enforcing an unwarranted restriction there. Whether it is desirable that the amount and frequency of short-term capital movements between countries be diminished in this fashion is debatable; it will be argued here that the resulting independence for monetary policy is worthwhile.

No novelty is claimed for the suggestion that forward operations be added to the more conventional tools of monetary policy. Keynes discussed the matter in his *Treatise on Money*[1] and the merits of forward intervention were further analyzed in the literature prior to World War II.[2] However, the theory and practice of forward exchange have, until just recently, been neglected topics. Forward exchange rates were not even mentioned explicitly in the International

* I am grateful for comments by C. P. Kindleberger, of Massachusetts Institute of Technology.

1. Vol. II (London: Harcourt, Brace & Co., 1930), pp. 319–31. He had earlier suggested that central banks might operate in spot and forward exchange so as to create more dependable hedging facilities for private traders. *A Tract on Monetary Reform* (London: Macmillan & Co., Ltd., 1923), pp. 132–34. The separation of internal and external short-term interest rates was mentioned briefly in the *Tract* at p. 135 and again at p. 192.

2. See, for example, R. G. Hawtrey, *The Art of Central Banking* (London: Longmans, Green & Co., 1932), chap. 7; P. Einzig, *The Theory of Forward Exchange* (London: Macmillan & Co., Ltd., 1937), chaps. 35 and 43; and C. P. Kindleberger, *International Short-Term Capital Movements* (New York: Columbia University Press, 1937), pp. 205–10.

Monetary Fund *Articles of Agreement*, and the potentialities inherent in Keynes's early proposals are not widely understood. Within the past few years the theory of forward exchange has again been discussed at some length but in a rather different context than that referred to here. The recent literature has concentrated, with few exceptions, upon the issue as to whether official counter-speculation would be useful during periods when the domestic currency was under speculative attack. I have dealt with that question elsewhere, concluding that unlimited official support of the forward rate would be unwise.[3] However, I believe that during more settled periods some variant of Keynes's proposals for central-bank operation in forward markets offers a valuable opportunity for monetary authorities.

I. Internal and External Rates of Interest

It is advisable, first, to describe the manner in which internal and external interest rates may be separated by forward exchange policy and to determine the maximum amount by which home interest rates may differ from foreign. With these basic matters established, special problems of a forward exchange policy can be analyzed more effectively. There would be no point here to a full review of the theory and practice of forward exchange,[4] but certain characteristics of forward markets will require comment. To simplify matters, attention will be confined to two-country examples involving the United States and the United Kingdom with forward contracts uniformly ninety days in duration. Unless expressly indicated to the contrary, it is assumed that the market expects existing exchange parities and support limits to be unaltered in ninety days' time.

The equilibrium differential between spot and forward exchange rates in a free market will approximate the short-term interest-rate differential between the countries in question.[5] A forward discount

3. In "Counter-Speculation and the Forward Exchange Market," *Journal of Political Economy*, LXIX (February, 1961), 49–55, which contains detailed references to the recent literature.

4. The standard work is P. Einzig's *The Theory of Forward Exchange*. See also his "Some Recent Changes in Forward Exchange Practices," *Economic Journal*, LXX (September, 1960), 485–95; S. C. Tsiang, "The Theory of Forward Exchange and the Effects of Government Intervention on the Forward Exchange Market," International Monetary Fund *Staff Papers*, VII (April, 1959), esp. 75–98; and E. Sohmen, *Flexible Exchange Rates* (Chicago: University of Chicago Press, 1961), chap. iv. A very lucid introductory treatment is provided by A. R. Holmes, *The New York Foreign Exchange Market* (New York: Federal Reserve Bank of New York, 1959), esp. pp. 36–54.

5. For qualifications, see the references listed above in n. 4. They do not affect the essentials of the argument to follow.

will appear for the country with the higher interest rate, and a forward premium for the country with the lower interest rate. Where short-term claims denominated in foreign currency are covered against exchange risk, the relative attractiveness of foreign and domestic short-term assets is determined not by the interest differential between them, as would be the case were no forward cover involved, but by the margin between the interest differential and the cost of forward cover. It follows directly that the relative attractiveness of foreign and domestic short-term assets may be altered by changes in the forward exchange rate as well as by changes in the interest differential.

For example, suppose that initially short-term interest rates in New York and London are each 3 per cent and that spot and forward sterling both sell at $2.80 in New York. Interest rates in New York then fall to 1 per cent as credit is eased in response to domestic considerations. This will reduce the attractiveness of short-term dollar assets and encourage a short-term capital outflow to London. The owners and prospective purchasers of U.S. Treasury bills yielding 1 per cent can switch into U.K. Treasury bills yielding 3 per cent and cover their spot sale of dollars by a forward purchase. However, the increased demand for forward dollars and the reduced demand for spot dollars occasioned by such transactions will operate so as to establish a premium on forward dollars equivalent to 2 per cent per annum, thereby removing the incentive for further switching of this sort from dollars to sterling.

If it were desired to avoid entirely the short-term capital outflow from the United States that serves to establish and maintain the equilibrium premium on the forward dollar, the Federal Reserve could at once peg the forward rate at the equilibrium premium at the same time that it lowered the domestic rate of interest. In the example cited, the forward rate would be quoted at $2.7860, assuming that spot sterling remained at $2.80.[6] Foreign owners of U.S. Treasury bills would make a 1 per cent yield on them plus 2 per cent on the sale of forward dollars at the established premium. United States residents could, it is true, buy sterling bills at 3 per cent, but the cost of exchange cover would set the over-all yield at 1 per cent. In effect, then, the short-term rate covered for exchange risk would be 1 per cent for United States lenders and 3 per cent for foreign lenders. A similar line of argument may be applied to bor-

6. This is the exchange-rate equivalent of the 2 per cent interest differential, assuming a ninety-day time horizon for market operators.

rowing transactions. Setting the forward rate at its equilibrium level serves to prevent, or at least to discourage, the shift of financing from London to New York that would otherwise occur.

The fact that spot rates of exchange are confined to narrow fluctuations around their stated parities does introduce a certain constraint upon the operation of forward exchange policy. This constraint is much like the limitation upon independent interest-rate policies that existed under gold-standard conditions. The maximum interest-rate differential between countries was then set by the spread between the gold points.[7] Although gold points do not now function as they did before World War I and again, for a time, in the interwar period, the official limits to spot rate movements do now play much the same role with regard to interest-rate policy.

This may be seen by returning to the previous example of a cheap-money policy in the United States. The monetary authorities reduce short-term interest rates for domestic reasons and establish a countervailing premium on the forward dollar. How large a discrepancy can exist between domestic and foreign interest rates? The answer depends on the position of the spot exchange rate. Given the position of the spot rate, the maximum interest-rate differential is determined. For example, if the spot dollar is very weak and stands at its upper support limit of $2.82, the forward dollar may be set at a maximum spread of 4¢, at $2.78. This amounts to about a 5.7 per cent premium on a per annum basis and gives the maximum amount by which United States short-term interest rates might temporarily be held below those ruling in London. Why could not the forward dollar be pegged at a greater spread? To do so would be to give the market a riskless profit. Unlimited amounts of forward dollars could be sold to the Federal Reserve at the rate of, say, $2.76 in the assurance that the spot dollar ninety days hence would not have appreciated beyond $2.78. Under the expectation that neither the stated parity nor the spread around parity would be altered within the duration of a forward contract, the supply of forward dollars becomes perfectly elastic at $2.78 (as the demand becomes perfectly elastic at $2.82).

The other extreme possibility is that the spot dollar is very strong and stands at $2.78. It is then impossible to peg the forward dollar at any premium over spot without encountering the difficulty de-

7. For exhaustive empirical analysis see O. Morgenstern, *International Financial Transactions and Business Cycles* (Princeton: Princeton University Press, 1959), chaps. v, vi, and vii.

scribed above.[8] In addition, should interest rates in New York be set below those in London when the spot dollar is at $2.78, an uncovered short-term capital outflow to London would result. It would be possible to switch from U.S. to U.K. Treasury bills without risk of exchange loss, since, at the worst, the spot dollar would be at $2.78 in ninety days' time.

Thus it may be seen that the amount by which internal and external interest rates may be separated depends directly on the width of the support limits for spot exchange. A similar situation influenced Keynes in his advocacy during the interwar period of a wider spread between central-bank buying and selling prices for gold so as effectively to widen the gold points. That logic in present circumstances would suggest widened support limits for major currencies in spot exchange markets. As a practical matter, it seems likely that such a step would have to seek its justification on a broader basis than that of facilitating forward exchange operations. For that reason this paper assumes that present narrow exchange spreads are to be continued.[9]

II. The Significance of Limited Fluctuations for the Spot Rate

Since it is assumed that spot exchange-rate fluctuations are to be narrow, it is essential to consider in greater detail the extent of the resulting limitations placed upon forward exchange policy. It has been suggested above that the maximum spread for spot rates of exchange establishes the maximum exchange risk and, as a consequence, the maximum amount by which home interest rates might temporarily be held below those abroad without capital outflow. The relationship between spot exchange-rate and interest-rate differential can be stated somewhat more generally.

If the spot dollar is at $2.82, interest rates in New York may be equal to those in London or up to 5.7 percentage points below them, with such a compensating adjustment in the forward rate as to render covered capital movements unprofitable. If interest rates in New York are set above those in London, with the spot dollar at $2.82, an uncovered capital inflow to New York occurs. If the spot dollar is at $2.78 with a policy of official intervention in the forward mar-

8. It has been suggested that collateral requirements might be employed in situations of this sort in order to limit the official commitment. See A. E. Jasay, "Speculation, Arbitrage, and Sterling: A Comment," *Economic Journal*, LXIX (September, 1959), 590–92.

9. The role of forward policy under a regime of flexible exchange rates has been analyzed by Sohmen, *op. cit.*, pp. 79–90.

ket, interest rates in New York may be set equal to those in London or up to 5.8 percentage points above them. With the spot dollar at $2.78 and interest rates in New York below those in London, an uncovered capital outflow to London occurs. Where the spot rate is at neither support point, a policy of forward intervention gains in flexibility, since interest rates may lie above or below those ruling abroad, although the extent of divergence in either direction is limited by the distance to the relevant support point.

The feasibility of forward intervention, even when spot rates fluctuate narrowly, is greater than might appear upon a first examination. Consider again the situation in which it is desired to hold domestic interest rates below foreign.[10] Here the constraint upon forward intervention will be relatively unimportant if the spot dollar is weak in exchange markets. (This was the case previously discussed with the spot dollar at $2.82.) In such a situation, a quite sizable interest differential can be offset by an appropriate premium on the forward dollar. Serious difficulties arise only if the spot dollar is so strong in the market as not to allow any premium (or only a very small one) to be established upon the forward dollar. But surely, if the spot dollar is this strong, there could be no weighty objection to a capital outflow to higher-interest-rate countries. In any event, should such an outflow become at all sizable, it would cause the spot dollar to depreciate and, in the process, remove the constraint under discussion.

A similar line of argument applies to the case in which, for domestic reasons, it is desired to hold interest rates above those ruling abroad. If the spot dollar is strong in the exchange market, it will be possible to establish an appreciable discount on the forward dollar. Forward intervention is constrained where the spot dollar is very weak. But this is a situation in which an inward capital movement uncovered against exchange risk should do no harm and could possibly be beneficial. On the basis of these considerations, it can be argued that considerable latitude would exist for the operation of forward exchange policy even in the face of a limited range for spot-rate movements.

The analysis to this point does, perhaps, overstate the amount by which domestic interest rates could, in practice, be separated from foreign without sponsoring some uncovered capital movements. It has been assumed that short-term capital movements are routinely covered against maximum exchange risk. However, a decision as to

10. The argument that follows owes much to Hawtrey (*op. cit.*, pp. 418–19).

whether or not fully to cover against exchange risk is likely to be affected by the size of the interest differential ruling at the time the decision is made. For example, consider two alternative situations differing only in the size of the interest differential between New York and London. The spot dollar is at $2.82, and New York interest rates are 1 per cent in each situation. In one situation the London rate is 3 per cent, in the other situation it is 5 per cent. The maximum exchange risk is the same in either case (assuming that the maintenance of parity and support limits is not in question). But it seems most unlikely that the market would uniformly cover exchange risk on the basis of the maximum conceivable appreciation of the spot dollar. Instead, some participants must be taken to attach a probability of occurrence to different spot rates ninety days hence. When London interest rates are 3 per cent, a United States investor with certain exchange-rate expectations may just be deterred by the existing premium on the forward dollar from a purchase of United Kingdom Treasury bills covered against exchange risk. But this investor with the same exchange-rate expectations might very well purchase U.K. Treasury bills at 5 per cent and leave the exchange risk uncovered, partially or entirely. The interest differential that can be maintained without capital movements is surely less than that corresponding to the maximum exchange risk. Only experience with forward intervention in a variety of circumstances would allow an informed estimate as to the extent to which uncovered capital movements of this sort would be important. It does appear that forward intervention would be the less effective in preventing unwanted capital movements, the wider the interest differential it was necessary to offset.

III. The Cost of Forward Intervention

Consideration must now be given to the cost of forward intervention. This will be interpreted quite narrowly as the money outlay by the central bank to establish the required forward exchange rate, given a desired relationship between domestic and foreign interest rates. In discussing the cost of intervention it is useful to distinguish between the case in which the domestic authorities operate independently and the case in which they co-operate with foreign authorities.

Suppose the situation is one in which it is desired to reduce the domestic short-term interest rate from 3 to 1 per cent while comparable London rates remain at 3 per cent. To do this without encouraging a covered capital outflow to London, the Federal Reserve

quotes the equivalent of a 2 per cent annual premium on the forward dollar. The cost on a forward contract is actually not determined until that contract is closed or extended and is dependent on the spot rate ruling at such time. It is conceivable that, 90 days after forward intervention, spot exchange might even be enough cheaper that a profit would be earned on official account. However, if forward policy is taken as adjusting the forward rate to the interest differential continuously over time, the best estimate of the unit cost of intervention in this case is simply the forward premium. Forward dollars are purchased at a price 2 per cent above spot, and this is the interest subsidy paid to the foreign investor.

It is assumed that the domestic authorities carry out their intervention by operating only in the forward market. Were they to accompany their forward purchases of dollars with spot sales, they could engage in interest arbitrage on official account and offset the premium paid on forward purchases by the extra yield they could earn on, say, British Treasury bills. However, the net effect of such a policy would only be the substitution of a capital outflow on official account for the outflow on private account that would otherwise have occurred. In addition, were the spot dollar very weak, it would not even be possible to accompany forward purchases with spot sales.

There is a more interesting possibility along these lines if the Federal Reserve and the Bank of England co-operated in forward exchange policy. It would then be possible for the central banks to conduct forward operations in the market and spot operations between themselves. For example, the Federal Reserve could buy forward dollars in the market sufficient in amount to establish the equilibrium premium and sell that amount of dollars spot to the Bank of England. The limited advantage of such a procedure would be that forward intervention could be practiced without the necessity of any open forward position on official account. If central banks did co-operate in forward exchange policy (with or without the spot accommodation just mentioned), there would seem to be a case for placing the cost of establishing a given forward rate upon the low-interest-rate country. The lower interest rate allows a larger volume of investment and higher domestic real income than would otherwise occur without a decline in exchange reserves. While there are benefits from intervention for a high-interest-rate country, a capital inflow is less onerous than an outflow where exchange reserves are scarce.

The total cost of intervention, whether to deter capital inflow or

outflow, depends on the volume of transactions upon which the unit subsidy is paid. Where very few transactions occur at the posted forward rate, the commitment of the authorities is small, but, by the same token, it is probable that only a small covered capital movement would have occurred in the absence of official intervention. On the other hand, a large volume of transactions at the official forward rate will occur, in the ordinary course of events, where otherwise a large covered capital movement would have taken place. It might also be pointed out that official intervention in the forward market will exert some influence on the current account of the balance of payments. Where export and import transactions in foreign currency are covered against exchange risk, a forward premium on the home currency amounts to a spot appreciation, and a forward discount to a spot depreciation. A current account very responsive to a policy of intervention would increase somewhat the cost to the authorities of establishing a given forward rate.

IV. The Benefit of Forward Intervention

The benefit that might be achieved by forward intervention cannot be contrasted in any very simple fashion with the monetary cost to the central bank of engaging in such a policy. Indeed, it would make very little sense to draw such a contrast unless it were assumed that the central bank should so conduct its policies as to maximize its profits. The technical advantage of forward intervention lies in the greater latitude that can be gained for domestic monetary action. However, the benefit corresponding to such greater latitude is not absolute and will vary from one situation to another. It is desirable to indicate, however broadly, the probable benefit from forward intervention in several circumstances.

First, and most obviously, there would be little benefit from forward intervention if interest rates could, without difficulty, be varied in accordance with domestic needs. This would require (in the absence of controls) very large gold or foreign-exchange reserves. Such a condition did, of course, obtain for this country from the mid-1930's until recent years. It obtains no longer, and the level and structure of interest rates are increasingly influenced by external considerations.

Second, much the same result may be achieved where fiscal and monetary policies are very good substitutes for each other. Where this is the case, a domestic recession can be combated with a budget deficit and a high enough rate of interest to avoid a capital outflow. The mixture of fiscal and monetary policy is set externally; but, by hypothesis, this is not serious in terms of direct effects on the size of

national output, since the two techniques are so closely substitutable. It does mean that the rate of interest is held at a higher level and that the budget deficit is larger in recessions than would otherwise be the case, with consequent effects on the composition of output. Even here, then, a policy of forward intervention could prove of some value if it were desired to avoid the shifts in output composition that would occur as the mix of fiscal and monetary policies changed over the cycle.

Third, there may be situations in which fiscal and monetary policies are not readily substitutable. A limiting case would be one in which fiscal policy was determined without any regard to internal or external balance, leaving the entire burden of adjustment upon monetary policy. If there were then any conflict between internal and external balance, the desirability of separating internal and external interest rates is unmistakable. In less extreme cases, where fiscal policy is an available alternative but cannot readily and quickly be used to restore internal balance, there is an opportunity for forward exchange policy to make a useful contribution.

It may be suggested that the choice in this country in the 1960–61 recession was, so to speak, to obtain a further degree of freedom by altering the relationship between domestic short- and long-term interest rates. Such a policy is certainly not without merit, but it does require a structure (and perhaps average level) of interest rates that would not otherwise be suitable. Furthermore, the separation of short- and long-term rates can be regarded only as a rather imprecise way in which to discriminate between domestic and foreign lenders.[11] Obviously, the short-term rate does not apply solely to non-residents and the long-term rate solely to residents. The clear advantage of forward exchange policy, in this regard, is that it would permit a separation of internal and external interest rates, thus allowing both the internal level and the structure of rates to be determined in the interest of internal balance.[12]

11. The recent proposal to issue special securities to foreign official authorities would go some distance toward meeting this objection. However, one would expect official holdings to be less interest-sensitive than those of foreign private investors. It has been suggested that this country should give a firm exchange guaranty in term of gold to all foreign holders of dollar balances (A. H. Hansen, "Appropriate Monetary Policy, 1957–60," *Review of Economics and Statistics*, XLII [August, 1960], pp. 255–56). This goes somewhat beyond the coverage that dollar-holders could obtain in the forward market. There may be a case for such a guaranty on official dollar holdings of foreign countries; its extension to private holdings raises certain problems.

12. A very interesting alternative to forward exchange-rate policy has been outlined by Sir Roy Harrod: the height of the short-term rate would be divorced from the state of monetary ease or tightness (see his *Policy against Inflation* [London: Macmillan & Co., Ltd., 1958], pp. 249–50; and his statement for the Radcliffe Committee in *Principal Memoranda of Evidence* [London: H.M. Stationery Office, 1960], III, 112–13).

V. Present Recommendations and Alternatives

The present paper advocates a policy of limited official intervention in the forward exchange market. Intervention would be limited to the necessary official purchases or sales to keep the forward rate at the interest arbitrage margin (in such relationship to the spot rate as not to encourage covered capital movements). In effect, the authorities would do immediately what the market would do only more slowly as private funds were shifted. Forward exchange policy as advocated here is almost directly opposite in purpose to that which has usually been advocated.[13] If successful, the recommended policy would discourage short-term capital movements; alternative policies would seek to encourage short-term capital movements so as to achieve a desired end.

The contrast between limited intervention and a "gold-standard" policy is most direct. The use of forward exchange policy to achieve a gold-standard result may be described as follows. Suppose that domestic interest rates are increased, with the objective of adding to official exchange reserves. The domestic authorities then buy foreign exchange spot and sell it forward. As a consequence, the profit margin for inward capital movements is maintained as official exchange holdings are increased by the amount of foreign funds available for interest arbitrage. In the absence of this official intervention, it might sometimes be the case that the forward rate would rather quickly reach such a level as to deter inward arbitrage on private account. Official intervention amounts to making the supply of forward exchange perfectly elastic at a rate that encourages capital inflow. This is a policy for external balance, and, except in special circumstances, it will not be the case that the interest rate is appropriate internally. In terms of forward operations, it is the exact opposite of the policy recommended here, since, after an interest rate increase, instead of buying forward exchange to avoid attracting foreign funds the authorities sell forward exchange to induce a supply of spot exchange.

Keynes advocated a very different course of action in the interwar period, and his proposals have recently been revived by Bent Hansen.[14] The separation of internal and external interest rates is cou-

13. It is mentioned as a possible course of action by Einzig, *The Theory of Forward Exchange*, p. 414.

14. B. Hansen, "Interest Policy and Foreign Exchange Policy," *Skandinaviska Banken Quarterly Review*, XXXIX (October, 1958), 114–21, and "Interest Policy, Foreign Exchange Policy and Foreign Exchange Control," *ibid.*, XL (January, 1959), 15–27.

pled with the freedom to induce an inward capital movement to offset a current-account deficit in the balance of payments. Such a policy differs fundamentally from the gold-standard procedure described above, in that the forward rate would be so adjusted as to induce an inflow of foreign funds, while the domestic rate of interest could be held at a level below that ruling abroad. The policy differs from that advocated here, in that the forward rate would be set not at the interest arbitrage margin but at whatever relationship with spot that would be required to induce a capital inflow of desired size. There is an empirical issue as to the sensitivity of foreign funds to the forward margin, but that issue will not be pursued here.

The program of limited forward intervention would abstain deliberately from any effort to offset a current-account deficit (or surplus) in the balance of payments. Instead, a current-account deficit (or surplus) should be offset by compensatory variation in official gold and/or foreign exchange holdings, including International Monetary Fund drawing rights. Forward exchange policy would seek only to minimize transactions on capital account arising because of a temporary discrepancy between home and foreign interest rates. A chronic deficit would, of course, require a more basic adjustment. The details of such adjustment are not relevant here, since it would not be reasonable in any event to combat a chronic deficit with forward exchange policy. In the case of a deficit thought to be temporary, there is little to be said in favor of inducing a capital inflow as an offset. Success in shifting private funds is inherently uncertain and, if achieved, is potentially disruptive in its effect on foreign money markets. Instead, it would seem preferable to use forward exchange policy so as to minimize shifts in private funds between countries as independent interest-rate policies are practiced. Ideally, the distribution of short-term funds between international money markets might become more stable because the equalization of monetary return (covered against exchange risk) should allow the distribution of funds to be governed by other, hopefully more stable, considerations. It is possible that the minimization of private short-term capital movements would somewhat increase the needed amount of official exchange reserves, although such minimization might also allow a more accurate estimate of exchange requirements.

It is not suggested that a limited policy of forward intervention could prevent all undesired capital movements. Specifically, the suggested program is not intended to apply to any situation in which the currency is under speculative attack (or receiving flight capital).

If the domestic currency were under attack, the authorities, in pegging the forward rate at the interest arbitrage margain, would be obligated to buy very large, perhaps almost unlimited, amounts of the domestic currency in the forward market. The implications of such a course of action will not be discussed here other than to suggest that official forward exchange policy is unlikely to achieve the desired results where there is a fundamental lack of confidence in the domestic currency.

VI. Conclusion

This paper has described the manner in which forward exchange policy might be employed so as to allow greater freedom for domestic monetary policy. The degree of success which could presently be achieved by our own monetary authorities through resort to such a policy is difficult to estimate in the absence of any detailed information on the extent to which capital movements are covered in the forward market.[15] Indeed, some experimentation with forward policy is probably the only way in which its potentialities could be assessed. While it is unlikely that forward intervention could make more than a secondary contribution to exchange policy, it could be instituted with a minimum of difficulty and might very well prove to be a useful technique in present circumstances.

15. In this connection it is unfortunate that our *Treasury Bulletin* no longer reveals data on spot and forward positions in the New York exchange market as it did prior to World War II. The situation in the United Kingdom is no better, since there the Treasury could offer the Radcliffe Committee no useful statistics on the extent of the forward market or the proportion of transactions covered against exchange risk (see *Minutes of Evidence* [London: H.M. Stationery Office, 1960], p. 248). The Radcliffe Report indorsed the qualitative judgment that capital inflows to London were typically covered in the forward market (*Report of the Committee on the Working of the Monetary System,* Command 827 [London: H.M. Stationery Office, 1959], p. 152). It is reasonable to believe that during much of the postwar period there would have been a lack of symmetry with covered capital movements to London and uncovered capital movements to New York. The German Federal Bank operated in the forward market prior to the appreciation of early 1961 without, it must be said, enjoying conspicuous success in preventing a capital inflow.

THE IMPLICATIONS OF THE CAPITAL GAINS TAX FOR INVESTMENT DECISIONS

CHARLES C. HOLT AND JOHN P. SHELTON*

University of Wisconsin and School of Business Administration
University of California at Los Angeles

THE MAJOR PURPOSE of this paper is to provide investors with a basis for considering the question: To what extent, if any, should the investor be "locked in" because of the capital gains tax? In an effort to communicate the ideas in this paper as clearly as possible, the following dialogue between an investor, age fifty, and one of the authors is offered as a prologue.

INVESTOR: "Sure, I think the market is high now and my stocks are priced at a level which is rather hard to justify in view of their prospective earnings or dividends. But I hate to sell them when it means I'm going to lose about 15 per cent of their value in capital gains tax. I don't see why I should do that unless I expect the market to drop 15 per cent."

AUTHOR: "Are you willing at this time to commit yourself to hold your present stocks for the rest of your life?"

INVESTOR: "I don't know exactly how long I'll hold them, nor how long I'll live, but probably I won't keep the present holdings for the rest of my life. At least I prefer to keep my investment decisions fairly flexible."

AUTHOR: "Then you probably aren't avoiding the capital gains tax by refusing to sell now, you are only postponing it, and the extra annual return you get from postponing the capital gains tax is probably about one and eight-tenths of 1 per cent (15 per cent $\times$ 12 per cent). Isn't it likely that your stocks could fall enough in value in the next year to more than offset the benefit of postponing the tax?"

INVESTOR: "Well, that's true if I intended to sell by next year anyway, but what if I hold for a longer period? Or what if I should die unexpectedly while I am holding my stocks and avoid the capital gains tax altogether?"

AUTHOR: "Your questions begin to introduce some of the aspects

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which make the problem complicated. First, let's begin by saying that the best way to consider any investment decision, whether capital gains tax is involved or not, is by comparing the expected future rate of return from one investment against an alternative. If, to simplify matters, we assume that the risk element is the same in each choice, then we can compare the alternatives simply by comparing their expected annual yields. This means that if you ignore, as a first approximation, the possibility of escaping the capital gains tax by death, then the length of time you will hold the security is unimportant except as an element in converting your total expected future return into an annual rate of return. How long you expect to hold the security becomes important only as it increases your probability of dying and thus avoiding the tax altogether. And actually it develops that there are compensating factors that make it not very critical to estimate accurately how long you will hold your present security."

INVESTOR: "Well, how should I evaluate the effect of the capital gains tax on my decisions to sell, hold, or switch? Should I just ignore it completely, or what?"

AUTHOR: "No, the capital gains tax shouldn't be completely ignored. Its impact differs, depending on three or four elements, but for many investors it is slight, so slight that it may well be subsidiary to other factors in the decision. Let me state the case in its simplest form. Assume as a first approximation that there is no possibility of death occurring and thus eliminating the tax; then the proportion of your investment that would go to pay the tax can be looked on as an interest-free loan from the government and the annual benefit of staying locked in is merely the rate of return you get on that loan. The problem gets more complicated when you consider the fact that every investor has some probability of dying each year and that probability increases with age. How an investor should consider this possibility of avoiding the tax altogether is too complex to explain fully in a brief sentence, but one way of handling the problem is to consider that any alternative security must return enough more to compensate, on the average, for the probability of having incurred the capital gains tax needlessly."

INVESTOR: "Do you think it is possible to calculate with any precision how an investor should adjust for the capital gains tax?"

AUTHOR: "If an investor will take the trouble to read and understand the following analysis he can gain at least two things from it. In the first place he will have acquired a useful way of thinking about the impact of the capital gains tax. He will be able to focus

on the important variables: the investor's age, the size of the capital gains tax bite, and the prospective return from the alternative securities. Second, if he wishes to be more precise, he can study how to use the tables in this article and can determine for each case how much extra yield he must expect from an alternative investment in order to overcome the disadvantage of incurring the capital gains tax."

I. Introduction

With the Dow-Jones Industrials close to 700, as of this writing, with price-earnings ratios averaging approximately 20, and with the dividend yields on common stocks continuing for the third consecutive year to be lower than the yields of AAA bonds, many investors must be considering the advisability of shifting from securities they now own, which may seem to have generously discounted future earnings, into bonds or other less price-inflated stocks. However, some investors will be concerned with incurring the capital gains tax. The purpose of this article is to consider the question: Should the capital gains tax influence investor decisions and, if so, to what extent?

Since this article is intended to help investors evaluate the impact of the capital gains tax on their investment decisions, it will make the treatment complete if some of the major regulations of the capital gains tax and the more obvious implications are briefly mentioned at the outset.

If an individual holds an asset (not connected with business inventory) for more than six months, then sells it at a profit, capital gains income is incurred, which is generally taxed at a favorable rate. In most cases a tax saving is effected by postponement of sale until the 6-month period is past. Loss from sale of assets is first offset against any gains. Any loss not thus offset may be subtracted from ordinary income up to $1,000 in the year during which the loss was incurred. If a portion of the loss is still unused, it may be charged against capital gains for the next 5 years or, if that does not absorb the loss, charged against ordinary income up to $1,000 for each of the 5 years. In general, the excess of capital gains over losses is taxed at a 25 per cent rate, unless the taxpayer would prefer to apply his regular tax rate to only 50 per cent of the gain. This latter, treat-the-gain-as-only-half-taxable, treatment is generally favorable if taxable income on a joint return is less than $32,000. Because losses in excess of $6,000 may not gain any tax benefit, it is often wise to take capital gains within 5 years of incurring large losses. Because losses

under $6,000 are chargeable against current income, it may not be advisable from a tax viewpoint to offset losses of this smaller magnitude with gains.

If an investor has decided to sell a security near the end of the calendar year, he would be wise, if the asset is selling for less than he paid for it, to establish his loss during the current calendar year and get the tax benefit almost immediately. The converse of the rule that the end of the year is a good time to establish tax losses is that the beginning of a calendar year is the best time to take capital gains, since this postpones the tax payment for 1 year. If an investor wishes to record a capital loss but not permanently withdraw as a stockholder of the company, he may repurchase the same securities after 30 days from the date of sale. If he chooses to invest in similar securities of comparable firms, he can make such a switch at the same time that he establishes his capital loss. If an investor who owned securities more than 6 months believes that his stock is quite likely to fall in price before the end of the calendar year, but he wishes to defer the capital gains liability until the following year, he can protect himself by selling short an amount of shares equal to those he holds and thus freeze his profit. This is referred to as "selling against the box." After the end of the year he can cover his short sale by delivering his original shares. The gain is reported when the short position is closed out by delivery of shares to cover it.

One final aspect of the capital gains regulations is important to mention. The capital gains tax liability is eliminated if the investor dies: the asset becomes part of the estate, taken at market value at the time of death. Likewise, no tax is incurred if an asset is donated to a legally recognized charitable organization or school. But the taxpayer is given credit, within the limitation for charitable donations, for the full market value of the asset contributed. Thus investors owning assets with substantial unrealized appreciation may get full value for them as a deduction for charitable purposes and avoid the capital gains tax.

The foregoing is background for analyzing more deeply the "lock-in" implications of this tax for investors.

II. Authorities Differ on Influence of Capital Gains Tax

An important choice faces the investor who has an asset that has risen in price since he purchased it and is wondering whether to switch to a more promising asset. If he does so, he will incur a capital gains tax, and this may make him reluctant to sell. Should he ignore the tax effects of the decision to change assets, or should he give it

considerable weight and, as the saying goes, "be locked into the asset because of the capital gains tax"?

The answer to this question as supplied by professionals in the investment market has been diverse. For example, Standard and Poor's in their publication, the *Outlook*, once said:

> Standard and Poor's organization is one of the largest, if not the largest, in the investment advisory field. We calculate that the value of stocks directly under the management of our personalized supervisory department alone amounts to several billions of dollars and that our printed publications reach the holders of additional billions in securities. Through continuous personal contact with clients we know beyond question why they are so reluctant to take profits; and, therefore, what the principal reason is for imbalance in the stock market as between supply and demand.
>
> *It is the restrictive influence of the capital gains tax. Emphasizing its effect, we estimate that of the funds directly under our supervision, somewhere between 70% and 80% could not be dislodged from stocks even were we to advise profit-taking sales.*
>
> The age of wealthy investors ranges principally from 50 to 75 years. Selling advices to such clients must give full consideration to the tax factor. The combination of a current 25% capital gains tax liability and an ultimate estate tax liability is too great a penalty on profit taking, as viewed by most well-to-do investors.
>
> We know from first hand experience that there are many hundreds of investment accounts under our supervision in which a shift of funds from stocks to tax-exempt bonds would be justifiable from the standpoint of portfolio balance, as well as income return after taxes, were it not for the deterrent of capital gains tax liability. When the feasibility of such a shift is weighed, we find that often it would take five to ten years of tax-free income on a 2.5% to 3.0% basis to make up for the capital gains tax that would be incurred by sale of stocks.[1]

A similar view was advanced in 1955 by the publishers of *Value Line*, an investment advisory service:

> [Some investors] now have enormous paper profits over their book costs. To sell now would be to invite the government to confiscate 15% to 20% of their capital. . . .
>
> . . . many hardheaded investors find that they would come off just about as well today sitting tight even if the stock market should drop 35% . . . as they would by selling and buying back . . . very few get out within 5% of the top or get in within 5% of the bottom. Therefore, even a 35% crack might not be worth trying to avoid.

They state further:

> The objection to converting from stocks to cash or bonds or even preferreds, of course, is the capital gains tax. Once a sale is made at a profit, 25% of the profit must be surrendered to the government. At this high level of stock prices, the capital confiscation incidental to sale becomes very substantial. Assume, by

1. *Outlook* (Standard and Poor's Corporation), XXVII, No. 3 (January 17, 1955), 180.

way of easy example, that the investor owns the Dow-Jones Industrial average at 162 (its low in 1949). Sale at 482 in 1955 would establish a profit of 320 points. The tax would be 80 points, or a 17% confiscation of the capital. This certain loss acts as a powerful deterrent, even to the investor who might accept the thesis that stocks are high. If the risk is that of a 10% or a 15% reaction (in the stock prices), nothing would be gained by selling "good" stocks with long-term growth prospects, paying the tax and getting back in again.[2]

It is interesting to note that even in 1928 and 1929, when the maximum capital gains tax was 12½ per cent, the capital gains tax was widely blamed for obstructing liquidation of securities, thereby creating a scarcity of stocks for sale and artificially boosting prices.[3]

Walter Maynard, senior partner of Shearson, Hammill and Company, says:

With capital gains you're betting the certainty of a 25% loss versus a problematical gain. And with that certainty of a loss investors will refrain from making a sale even while admitting the price of a security is high enough for him to get out.[4]

An unidentified trustee of a large Boston banking concern is quoted in a recent issue of *Business Week* as follows:

The money in Boston is mostly in duPont, I.B.M. and other quality issues. If you sell them now it's in expectation of buying them back later. But the price has to go down more than 30% to offset what you have to pay in Federal and State Taxes.[5]

The opinion that the capital gains tax may be an important determinant in investment decisions is not shared by all investment authorities. For example, the Twentieth Century Fund, in its study entitled *The Security Markets,* contended that the capital gains tax should have absolutely no effect on investors' decisions:

The price of a given share must move upward or downward, or remain stationary. From the stockholder's point of view, to sell when one expects the price to go up even if there were no capital gains tax to be paid would be foolish; to hold when the price is expected to decline merely to escape payment of a tax would be equally foolish. If the price is expected to remain stationary, no incentive for selling exists. In none of these three alternatives does the existence of a capital gains tax operate to make the wisest course of action other than it would be were there no such tax. . . .[6]

2. *Value Line Investment Survey,* March 14, 1955, and September 26, 1955.

3. L. H. Seltzer, *The Nature and Tax Treatment of Capital Gains and Losses* (New York: National Bureau of Economic Research, 1951), p. 176.

4. Quoted in *Time Magazine,* December 8, 1958, p. 100.

5. Quoted in *Business Week,* June 6, 1959, p. 74.

6. *The Security Markets* (New York: Twentieth Century Fund, 1935), p. 346.

Mr. J. A. Livingston, a financial columnist with considerable readership, has indicated that he shares the belief that the capital gains tax should not influence investment decisions:

> Taxes are beside the point. The sophisticated investor doesn't allow the tax collector to make his market decisions. . . . If you no longer like a company . . . , if you think the stock is overpriced, then you ought to get out, taxes or no.[7]

Mr. Harry D. Comer, partner in charge of research for Paine, Webber, Jackson and Curtis, has said in a recent company bulletin:

> The analysis that follows in this letter demonstrates the fallacy of believing that an investor should not accept profits and pay the capital gains tax unless he is really certain that the price will decline enough to permit him to retrieve the tax payment. In fact, *repurchase on any decline works out to the advantage of the investor.*[8]

The conflicting views above indicate the wide range of opinion that may be found among investors regarding the impact of the capital gains tax on their decisions to hold or sell a security. The thesis of this article is that neither of the extreme positions is correct. The impact of the capital gains tax depends on the investor's situation, but only under extreme circumstances should the investor assume that it is unwise to incur a capital gains tax unless the security he is selling is likely to fall by an amount greater than the tax. In fact, a decline of much less than the amount of the tax will justify the selling of the security in most cases. But also it is incorrect to say that sale and repurchase on any decline benefits the investor.

III. In Most Cases the Tax Can Only Be Postponed, Not Avoided

The usually accepted economic criterion for answering the question whether or not an investor should switch to an alternate security, regardless of whether he has a capital gains tax, is to compare the present value of the future stream of earnings from his present asset (including the net sale price of the asset at some future date) versus the present value of the income from an alternative asset. While this approach has much to recommend it, the analysis tends to become unwieldy, and hence a more pragmatic, operational guide for decision is sought for the present capital gains study.

To isolate the influence of the capital gains tax, it is assumed that

7. Livingston's syndicated column appeared, among other places, in the *Washington Post* and *Times-Herald*, October 12, 1954.

8. H. D. Comer, "How To Profit while Paying Capital Gains Taxes," *Research Bulletin* of Paine, Webber, Jackson and Curtis, March, 1960.

shifts are considered between securities of comparable risk.[9] This means that a similar discount rate can be applied to the future earnings and capital gains of the alternative securities. Consequently, the present value will be maximized if the average annual income is maximized. Average annual income is defined to include both dividends and capital gains or losses that may be incurred in the future. Thus, in many cases, the investor who is considering selling a stock —whether or not he has a capital gain—need ask only the question: "What is the anticipated average annual income from the alternative securities into which I might switch, compared with the anticipated average annual income from the security I'm holding?" Although a forecast of average annual income is an exceedingly simple type of forecast, its simplicity is a virtue when it is used as a basis for an investor to evaluate the impact of the capital gains tax. Furthermore, annual income forecasts are not an unreasonable basis for decisions, since high discount rates significantly diminish the importance of forecasts beyond relatively short horizons.

The major error in the investment analysis of the capital gains tax is the incorrect, though understandable, assumption that the tax on a security showing a paper profit can be *avoided* simply by a decision not to sell. Actually, the only ways that the capital gains tax can be avoided are by holding the security until death; giving the security to a charity; making sufficient capital losses fully to offset the gains; or repeal of the law which established the tax on the capital gains. Aside from these perhaps unpleasant or unlikely alternatives, the capital gains tax is not avoided but merely *postponed.*

Presumably, most investors do not contemplate avoiding the tax by any of the above means; for most people the tax *will be paid*—sooner or later. Hence it is clear that, for most people and institutions, decisions involving the capital gains tax should not focus on this issue: should the tax be *avoided,* but should focus on the issue: should the tax be *postponed.* Usually there is advantage in postponing a tax liability, but, as will be stressed below, the advantage of *postponing* the tax is much less than the benefit that would result if the tax could be *avoided.*

Postponing the sale of a security on which he has a paper profit has the same effect as if the investor obtained an interest-free "loan" from the government of that portion of the security's current value which corresponds to the capital gains tax. The tax payer "owes" the

9. The suppression of risk considerations is a limitation of the following analysis. Much more work on this problem is needed.

tax, but its due date is postponable. This "loan" from the government becomes due when the investor finally sells the security. How much is this "loan" worth to the investor? Its value depends on its size (i.e., the amount of capital gains tax he would have to pay if he sold now) multiplied by the after-tax yield that he will get from the "investment of the loan" in the security. Thus the investor's choice is between (1) the future dividend and capital gain return on the present investment, including the part that "belongs to the government," and (2) the corresponding return on a smaller investment in an alternative "switch security" that offers a higher yield—the relevant comparison, of course, being after taxes.

A numerical example will illustrate the point. Assume that a share of stock was purchased for $10.00 and its value has risen (more than 6 months later) to $50.00. Further assume that, because of high income, the investor is in the maximum capital gains tax bracket of 25 per cent. Note that such a situation makes the penalty of incurring the capital gains tax especially severe; not only is the tax rate maximum, but the stock has shown an unusually large gain. Not many investments attain a capital appreciation of 400 per cent. Assume that the investor believes that in the future this stock will, on the average, yield (including both capital gains and dividend income) 4 per cent per annum after taxes. If any alternate security can be found that is expected to yield over 5 per cent on the average in the future, then the investor should not be deterred from switching because of the capital gains tax. On his present stock he expects to net annually 4 per cent $\times$ $50.00 or $2.00 per share. If he switches to another stock, he will incur a capital gains tax of $10.00 (25 per cent $\times$ $40.00 capital gain), which will leave him $40.00 per share to invest in the alternative stock. If this yields over 5 per cent, it will give the investor more net income than the $2.00 that he expects to receive annually from continuing to hold his original stock. Thus in this extreme case a yield differential in favor of the alternate stock of 1 per cent would be enough, as far as current income is concerned, to offset the capital gains tax.

The yield required to justify switching from a stock with a potential capital gains tax liability can be indicated diagrammatically for a wide range of yields and tax liabilities (see Fig. 1). The expected future yield of the stock currently owned is charted on the vertical axis labeled *H, Yield on Security Held*. The corresponding yield on the security to which the investor may switch is measured on the horizontal axis, labeled *S, Yield on Switch Security*.

It should be recalled that the yields H and S, as defined in this paper, mean expected future average annual dividend income and capital gains net of taxes divided by the current market value of the respective securities and expressed as a percentage per year. An easy procedure for computing these yields is presented at the end of this section.

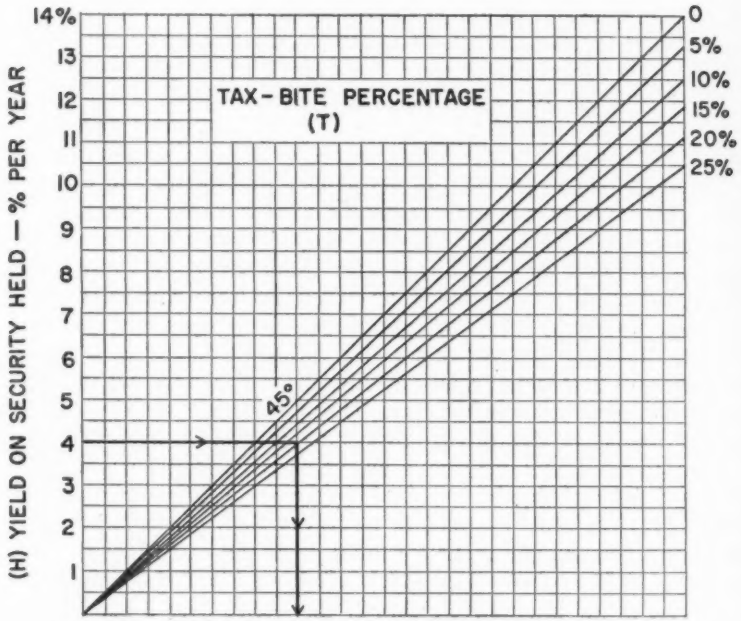


FIG. 1.—Capital gains tax analysis: postpone or pay now

Assume for the moment that no tax or other costs were involved in switching, then the investor would sell the stock yielding H and buy the stock yielding S, if S were only slightly greater than H. (This situation is indicated by any point below the 45° line.) If switching stocks requires the investor to incur a capital gains tax, then the yield S must be greater than H to compensate for the tax payment. How much greater S must be than H to warrant a switch depends on the proportion of the presently owned stock investment

that would be paid in taxes. Let this "tax-bite-percentage" be labeled T.[10]

In Figure 1 the differential between the yields H and S required to neutralize the capital gains tax is indicated by the lines below the 45° line corresponding to different tax-bite percentages. The above numerical example can now be illustrated by drawing a horizontal line from the 4 per cent H yield to the 20 per cent tax-bite line. Dropping vertically shows that an S yield of 5 per cent or better is required to justify switching.

A few other examples will illustrate the use of this graph for estimating the yield differentials that are needed to make switching profitable. If T is 10 per cent (which would occur if an investor held a stock that had doubled in value and his income put him in the 40 per cent marginal tax bracket so that his capital gains tax was 20 per cent), then the second line below the 45° angle indicates that if H is expected to be 4 per cent, then a switch will not be profitable unless S exceeds 4.44 per cent; for an H of 6 per cent, S must be 6.66 per cent. If T is 15 per cent (this would apply if an investor in the maximum capital gains tax bracket held a stock whose price had risen say from 40 to 100), then S will have to be greater than 4.65 per cent to justify a switch when H is 4 per cent; when H is 6 per cent, S must be at least 7.05 per cent. If T is 20 per cent (arising, e.g., from a 400 per cent price increase for an investor in the maximum capital gains tax bracket), then if H is 4 per cent, S must be 5 per cent or greater; if H is 6 per cent, S must be 7.5 per cent. In short, each line indicates, for its particular tax bite, the alternate yields that are required to justify a switch despite the payment of the capital gains tax. As can be observed, it takes *both* a large price appreciation and a high tax rate to generate a relatively large yield differential in favor of holding the current security.

If the investor prefers formulas to graphs, he can calculate the yield that would be required of the switch security from the formula

$$S > \frac{H}{1-T}.$$

If an alternative security has been found with a sufficiently high yield, S, to justify a switch, then it is possible to calculate the yield increase that is obtained by the switch. The yield increase (which we shall call "switch advantage") is the difference between the yield

10. T is equal to $g\ [P_1 - P_0 / P_1]$, where g is the percentage rate of tax on capital gains, P_1 is the selling price, and P_0 is the basis price of the security. T is simply the proportion that the "tax bite" is of the market value of an asset.

on the new security after allowance for taxes and the yield on the original security. Thus the switch advantage may be calculated from the expression $(1 - T)S - H$. This may be read from Figure 1 by drawing a vertical line from S until it intersects the T line and then drawing a line left horizontally to the H axis. The difference between this point and the value of H for the security held is the switch advantage.

Thus far in this paper it has been shown that, unless the investor contemplates avoiding the capital gains tax by dying or giving away the stock or incurring a capital loss, he only postpones the capital gains tax by choosing to remain "locked in" securities he holds. The advantage of postponing the tax can be calculated, and the investor can determine how much greater the yield must be from some alternative investment to justify switching. Although precise data are unavailable, it would appear that for most investors the yield differential that is necessary to justify switching is smaller than the uncertainty that attaches to forecasts of future yields of securities and often is smaller than the yield differentials that are forecast between alternate securities.

The principal benefits that a security holder expects to accrue as a result of holding a security are the dividends and capital gains that he obtains after the necessary taxes are paid. To obtain a single yield figure that accurately reflects these benefits involves the consideration of two kinds of income and the tax rates applicable to each.

A tabular presentation that illustrates how the anticipated, after-tax, combined (i.e., dividend plus capital gains) yield for a security might be calculated is shown below for a taxpayer whose marginal tax rate is 30 per cent.[11]

Estimated annual dividend yield	4%	
Less: Income tax (30%×4%)	−1.2%	
		2.8%
Estimated annual capital gain yield	3%	
Less capital gain tax (15%×3%)	−0.45%	
		2.55%
Estimated, after-tax, combined yield (i.e., S or H)		5.35%

11. The marginal income tax rate is the percentage of an additional dollar of regular income that would have to be paid in taxes.

IV. The Possibility of Avoiding the Tax by Death

The analysis up to this point has dealt with the problem: How much influence should the capital gains tax have when an investor is considering switching from a stock with a paper profit to an alternative asset, assuming that sooner or later the capital gain will be realized and the tax paid? This is a suitable assumption for corporations which need not die (by the nature of their legal organization), taxable trusts, and probably most investors under age fifty, since they are *likely* to live long enough to have a fairly complete turnover in their security portfolios during their remaining years of life. Even if the investor is elderly with a short life-expectancy, the same analysis applies, assuming that he wants to maximize his income (including future capital gains) during the remainder of his lifetime without consideration of his heirs.

However, the investor may be concerned not only with maximizing his income but also with the value of his estate. There is always the possibility that the capital gains tax on a security will be avoided by dying, unexpected though it is. In this case, a switch that gives the investor greater dollar yield than his present stock, which is the basis of the decision above, may leave him with a smaller estate. To illustrate, if a stock with a current market value of $10,000 yields 3½ per cent and an alternative stock promises a yield of 4 per cent, the investor would, on the basis of the yield, be indifferent which he holds if the capital gains tax liability incurred by the switch is $1,250. However, should he die soon after switching, his estate would have stocks with a market value of only $8,750 instead of $10,000.

If the investor wishes to maximize some combination of the value of his estate after death as well as income before death, he must look for an even higher yield on the stock into which he will switch than is required simply to improve expected income. How much larger must the yield be to justify a switch when one includes the possibility of death providing avoidance of the tax? The answer is not simple; it depends on several things in addition to the size of the tax bite: How long would the investor keep the stock he is holding if he did not switch now? How likely is he to die before selling? More specifically, what is the probability that the tax will be avoided by death during the period in which he would normally hold the stock? Some examples are illuminating. For an eighty-year-old male investor who normally holds a security 5 years, there is a prob-

ability of 50 per cent that death will occur before the stock is sold; for a 45-year-old investor who would be selling his stock in any event within 3 years, the probability of capital gains tax avoidance through death during the next 3 years is 1.6 per cent.

It is difficult to measure the cost of incurring the capital gains tax when there is a possibility of death canceling the tax liability, because it is not clear what an investor is trying to maximize.

The authors have assumed that a switch would not be warranted unless income was increased *and* the amount of the capital gains tax was expected to be recovered. This criterion enables us to provide the investor a basis for gauging the effect that his mortality prospects have on his investment decisions—a basis that can be related closely to the general, income-maximizing decision rule stated earlier.

The analysis used when estate values are considered requires three assumptions: (1) The investor can estimate how long he will, in all likelihood, continue to hold the present security if he does not switch now. For example, he may think, "I plan to keep this stock 4 years and then will sell it to pay for my child's college expenses." Or he may simply say, "I find I hold a security about 10 years before I sell it." (2) If he switches from his present security, he will save any additional income and thereby tend to offset the reduction in estate value arising from paying the capital gains tax. (3) Lacking the ability to predict the time of his death, the investor can do no better than to make use of probability data calculated from mortality tables.

How much more needs to be earned on the switch security to expect recapture of the capital gains tax that was paid? The answer depends on these factors: (1) the amount of the capital gains tax; (2) the age of the investor (the older he is, the greater the chance of avoiding the capital gains tax by death); and (3) the length of time the investor plans to hold the security if he does not switch now. If he is going to sell the security fairly soon anyway, his chances of avoiding the tax through death are extremely slight, and he should think of the capital gains tax as postponable, not avoidable—in which case the first analysis suffices.

The two formulas that follow indicate the difference that results if the investor takes the viewpoint that he wants not only to increase his income but also to obtain enough extra income so that he can compensate for incurring the capital gains tax. As was discussed

above, the criterion for deciding whether to hold or switch when the investor is focusing only on income is

$$S(1-T) \geqq H \ .$$

When the investor is looking not only at the expected income flowing from the asset but also at the value of the asset, then S needs to be even larger:

$$S(1-T) \geqq H + T \times P \ .$$

In this case S, after being reduced by multiplying by $(1 - T)$, must equal or exceed H *plus* the tax bite multiplied by a probability factor, designated as P (a number whose calculation is rather complex). The letter P stands for the weighted, annual probability that an investor at a given age will die during the period he expects to continue holding the security (if he does not switch).[12]

When the tax bite (stated as a percentage of the asset now being held) is multiplied by P, it gives the extra annual yield that needs to be achieved to replace, on the average, the tax incurred if the asset is sold.

Table 1 indicates the value of P at various ages and for various "continue-to-hold" periods. As would be anticipated, the value of P increases the older the investor gets and the longer the investor expects to hold the present security. But the magnitude of the extra annual yield required warrants consideration. Until the investor reaches fifty-five and decides to hold the present asset for the rest of his life (if he does not switch at this time), P is less than 5 per cent. Furthermore, it should be remembered that P is multiplied by T, which for many investors is less than 10 per cent. (An investor whose stock had risen from \$60 to \$100 and was in the maximum

12. The precise formulation used for calculating the values in Table 1 is

$$P = \left[\sum_{n=1}^{N} P(A, n)\right] \div \left\{\sum_{n=1}^{N} (n - 0.5)P(A, n) + N\left[1 - \sum_{n=1}^{N} P(A, n)\right]\right\},$$

where N is the number of years in the expected "continue-holding" period, and $P(A, n)$ is the probability that an investor who is now A years of age will die in the nth year from now, where $1 \leq n \leq N$.

For the detailed theory see "The Lock-In Effect of the Capital Gains Tax" by the authors of this paper (manuscript).

Probability data are from Mortality Table X-17, a fairly recent mortality table prepared by a committee of the Society of Actuaries, which probably represents as accurate a current mortality forecast for investors as is available.

tax bracket would pay a capital gains tax of $10, which is an example of how steep the tax and gain needs to be before $T = 10$ per cent.) Thus, for many investors, the increase in yield required to justify a switch if the investor desires not only to maintain his income but also to rebuild his estate is about one-half of 1 per cent (10 per cent $\times$ 5 per cent) per annum.

The analysis can be further explained by a numerical example. Assume an investor aged 60 and in the top tax bracket owns a secu-

TABLE 1*

THE VALUES OF P: EXPECTED CAPITAL GAINS TAX SAVING BY DEATH PER CENT PER YEAR OF POTENTIAL TAX LIABILITY

INVESTOR'S AGE	YEARS THAT INVESTOR WILL CONTINUE HOLDING THE SECURITY								
	1	2	3	4	5	8	10	15	Life
25	0.159	0.161	0.162	0.164	0.167	0.175	0.182	0.208	2.18
30	0.182	0.186	0.189	0.193	0.197	0.213	0.228	0.283	2.41
35	0.225	0.232	0.240	0.249	0.265	0.298	0.327	0.418	2.71
40	0.330	0.346	0.362	0.378	0.396	0.454	0.500	0.647	3.09
45	0.507	0.530	0.554	0.579	0.607	0.702	0.778	1.02	3.62
50	0.787	0.825	0.866	0.909	0.956	1.12	1.24	1.61	4.20
55	1.26	1.33	1.40	1.47	1.56	1.81	2.00	2.55	5.08
60	2.04	2.14	2.24	2.35	2.46	2.83	3.12	3.89	6.21
65	3.23	3.38	3.54	3.71	3.88	4.44	4.81	5.77	7.82
70	5.11	5.33	5.56	5.81	6.03	6.72	7.30	8.42	9.99
75	7.62	7.92	8.24	8.57	8.91	11.54	12.07	13.28	14.25
80	11.64	12.12	12.58	13.08	13.51	14.73	15.41	16.51	17.14
85	17.52	18.21	18.96	19.39	19.94	21.39	22.12	23.42	23.42

* The figures in this table are percentages. This means that they range from 23.42 per cent (highest) to 0.159 per cent (lowest). In using the table, it should be remembered that the decimal points need to be shifted two places to the left, e.g., 0.2342 and 0.00159.

rity now selling at $50 which he bought at $30. He is considering switching to another security, but he thinks that if he does not make the switch now, he will probably hold the present asset at least 10 years. As best he can estimate, the stock he now holds will, on an annual basis, return him 4 per cent after taxes (including both dividends and change in value). If he disregards the size of his estate and is concerned only with the income, he can switch to another security of equal risk if he thinks it will yield more than 4.44 per cent. (This is calculated from the formula $S[1 - T] \geq H$ as follows: $0.0444(1 - 0.10) = 0.04$.) But if he not only wants to maintain his income but add enough each year to compensate—on the average—for tax loss, he must find a security to switch into that yields at least 4.791 per cent. (The formula is $S[1 - T] \geqq H + T[P]$,

which in this case has numerical equivalents of 0.04791 [1 − 0.1] = 0.04 + 0.1[0.0312].)

Assume that the investor described above owns 200 shares of stock with a market value of $10,000 and an expected after-tax income (inclusive of dividends and change in value) of $400. If he switches to a security that yields 4.44 per cent, he will be able to reinvest only $9,000 but will get the same income. If he switches to a security that yields 4.791 per cent, he will receive $431.20. By saving the extra $31.20 per year, he will, in a probabilistic sense, leave the same estate as if he held his present security.

The phrase "in a probabilistic sense" needs more explanation. Based on current mortality tables, 27 per cent of the American people of age sixty will have died by age seventy. Since the capital gains tax in this illustration was $1,000, it is clear that $31.20 per year for 10 years would roughly compensate for a 27 per cent chance of death nullifying the tax. The reason the actual figure is $31.20 instead of $27 is because the number cited in "Probability" Table 1 is an annual rate of return that has to be weighted by the fact that the probability of death in each year of the assumed investor's next decade is not constant. Clearly, any particular investor will either live through the anticipated 10-year "continue-holding" period and then sell his stock, so he finally incurs the capital gains tax, or he will die during the period and the tax will be nullified. But at the time of his decision, when he is sixty, he has no way of knowing whether or not he will live to seventy, so he should make his decision by "playing the averages," i.e., by making probability calculations.

Admittedly, the concept of the continue-holding period is a bit awkward and its length difficult to estimate. Fortunately, Table 1 indicates that the estimate is not critical. That is to say, large changes in the length of the continue-holding period do not make large changes in P, and hence errors in estimating the holding period will have little influence on the hold-switch decisions that are made.

VI. Sale and Repurchase of a Security

The capital gains lock-in question also arises in the situation in which a security is held that has attained capital gains in the past and optimistic forecasts are made for gains in the long-term future but price declines are anticipated for the near future. Should the investor sell out now and buy back later at a lower price, or should he ride through the temporary decline and hold for the long-run potential?

It would seem to be unusually difficult to justify incurring a capital gains tax when the investor expects to repurchase the same security if the fall in price is likely to be less than the capital gains tax incurred. In this circumstance, the yield on the alternative security is going to be very close to the yield on the security he is now holding, since the "hold" and the "switch" security are one and the same. Analysis shows that the decision here depends on the amount of capital gains tax to be incurred, the amount of prospective decline in the security that can be avoided by selling out and buying later, and the potential future growth of the security price.[13]

The results of this analysis can be illustrated by means of a numerical example, which for simplicity's sake assumes dividends are not being paid. Since it is obvious that any foreseeable decline in price that exceeds the amount of the capital gains tax would clearly justify selling the security, the illustration in Table 2 will assume that the drop foreseen by the investor is less than the capital gains tax. Also we assume, as we did in Section III, that the capital gains tax *will* be paid before death.

Consider the implications of this illustration. The stock ultimately had to rise to \$130 before the investor who chose to hold on to his stock and avoid the capital gains tax (despite the foreseeable drop from \$70 to \$65) did as well as the investor who sold and then repurchased at the lower price. Yet this illustration uses figures that present an extreme case of being locked in: the original increase is large, the investor's tax bracket is maximum, and the drop is only half the tax. If the stock subsequently rises from the low of \$65 to less than \$130, the investor who sold and repurchased does better than the one who chose to be locked in by the capital gains tax when the expected decline was only \$5.00 and the tax liability was \$10.00.[14]

VII. In Conclusion

As the analysis has shown, the effect of the capital gains tax will depend on several factors: the investor's tax bracket, the portion of

13. This situation is analyzed in more detail in "A note on R. F. Gemmill's article 'The Effect of the Capital Gains Tax on Asset Prices,'" by Charles C. Holt, *National Tax Journal,* June, 1957, and in Gemmill's article, *National Tax Journal,* December, 1956.

14. The numerical illustration above can be explained in terms of an analysis of the sell-and-repurchase case. But it can also be understood in terms of the rule $S(1 - T) \gtrless H$. In this case the yield included in S relates to the growth from \$65, and yield H is based on growth from \$70. Clearly, S exceeds H. However, the person who held throughout the drop owns more shares, and, when the subsequent gain becomes great enough, the differential between S and H becomes sufficiently small that the value of the extra shares for the "hold" alternative offsets the yield differential that exists for S.

the present asset that represents capital gains, and the expected future income from the asset he holds. If the investor not only is concerned with maximizing the income that he or his estate will receive but is also seeking to maximize the market value of the estate, then he must also consider his age and the length of time he will probably continue to hold the present asset.

Some idea of the magnitude of the difference in yield necessary to justify a switch when the capital gains tax is involved can be obtained from analyzing the situation of a typical investor. Based on recent surveys, the typical (median) American common-stock owner's annual income is about $7,500, he is about fifty years old, and he has held his stock about 5 years. If we assume his stock has

TABLE 2

ASSUMPTIONS

1. Purchase price of 100 shares was $30.00 each.
2. Current market price is $70.00.
3. Investor is in the maximum tax bracket, so the capital gains tax is $10.00 per share.
4. Price is expected to drop in the near future to $65.00.

RESULTS

If Investor Continues To Hold until Price Reaches $130		If Investor Sells, Repurchases at $65.00, then Resells at $130.00	
1. Eventual sale price (100 shares×$130)	$13,000	1. First sale (100×$70)	$ 7,000
2. Less base price	3,000	2. Less base price	3,000
3. Profit before tax	$10,000	3. Profit before tax	$ 4,000
4. Less capital gains tax	$ 2,500	4. Less capital gains tax	$ 1,000
5. Net profit	$ 7,500	5. Net profit	$ 3,000
6. Plus original investment	3,000	6. Plus original investment	3,000
7. Total value of assets at end	$10,500	7. Available for reinvestment	$ 6,000
		8. Number of shares repurchased ($6,000÷$65=92.3077)	.....
		9. Second sale (92.3077×$130)	$12,000
		10. Less base price	6,000
		11. Profit before tax	$ 6,000
		12. Less capital gains tax	1,500
		13. Net profit on 2d sale	$ 4,500
		14. Plus base investment of repurchase	6,000
		15. Total value of assets at end	$10,500

shown about the same price appreciation as the average, he will have nearly a 50 per cent gain, which means that about 33 per cent of the current market value of his security is subject to capital gains tax. For example, if he bought a stock at $40, it is probably selling at about $60 now. Since the extra tax he would have to pay would be 15 per cent (half his marginal tax rate of 30 per cent) of the capital gain, T (the percentage of the asset going to taxes) would be 5 per cent (0.33×0.15). If he expects the present stock to yield from the combination of dividends and appreciation approximately 6 per cent per year after taxes, he will suffer a decline in income if he cannot find another investment that will have an expected yield (calculated as above) of at least 6.32 per cent. In short, the typical American investor may find that the capital gains tax requires him to seek one-third of 1 per cent extra annual yield to justify switching. If he not only wants his income to remain undiminished but also wants his estate to have no reduction in market value, he finds, by including information from Table 1, that he should not switch unless the alternative security promises a yield of 6.37 per cent, assuming that he thinks he will continue to hold the present security another 5 years if he does not sell now.

Consider an extreme case: the investor is in a maximum tax bracket; he is seventy years old; he has an asset that has tripled in value; he thinks that he will hold this asset, which he expects will provide an after-tax annual return of 6 per cent, for life. He should not switch unless an alternative asset yields 7.2 per cent if he is not concerned with the market value of his estate. If he also wants to leave an undiminished estate, he will need to find an asset with annual expected yield of 8.87 per cent (details of the calculations for these two cases are shown in Case 1 and Case 2, respectively, in Table 3).

What does this analysis mean for the investor who, understandably, may feel bemused by the theoretical overtones of the formulas and graphs? Unfortunately, some complexity is necessary if the conclusions are to be supported. Even for an investor who finds little practical value in the details, the analysis gives insight into the essential aspects of how the capital gains tax can influence investment decisions. For one thing, to ignore completely the capital gains tax, as some advisers have recommended, is seen to be in error. On the other hand, it is equally misleading to feel that the investor must anticipate a drop of 20 or 30 per cent in the price of the stock he is holding before he can justify selling out. In fact, it is clear that in most cases an anticipated decline in the particular stock held by the

investor can be considerably less than the amount of the tax to justify selling, even if he plans, at a later date, to rebuy the same security.

But the investor may still feel that the analysis is too theoretical for his purposes, since it requires him to make a forecast of the annual rate of return that he will expect from the security which he is holding and from an alternate security into which he might switch. "This," the investor might say, "is the counsel of perfection." The ability to forecast rates of return accurately would make most investors willing to forget the small burden of the capital gains tax.

TABLE 3

EXAMPLES OF THE CALCULATION PROCESS

	Case 1	Case 2
1. Present market price of stock	\$60	\$60
2. Base price for tax purposes	40	20
3. Taxable gain	\$20	\$40
4. Capital gains tax rate (1/2 marginal tax rate, but not greater than 25 per cent)	15%	25%
5. Amount of capital gains tax (Row 3 × Row 4)	\$ 3	\$10
6. Tax as a per cent of market value—denoted as T in this paper (Row 5 ÷ Row 1)	0.05	0.167
7. Expected, annual, after-tax rate of return from dividends and change in market value for security now held—denoted as H in this article	0.06	0.06
8. Minimum rate of return (calculated on same basis) required from alternative security to maintain income—denoted as S in this article [Row 7 ÷ (1 − Row 6)]	$\frac{0.06}{0.95}=0.0632$	$\frac{0.06}{0.833}=0.072$

If the investor not only wishes to maintain or increase his income, but also will not shift unless, in all probability, he will get enough extra income to recapture the amount of the tax that he has to pay, then he must first estimate his "continue-holding" period. This is the length of time that he will be likely to continue to hold the present asset if he does not sell it now. At the end of this period, if he is still living, he will sell the asset anyway and the tax will have to be paid. Thus the probability of death nullifying the tax is applicable only for the duration of the continue-holding period. In this case assume that the investor in the left-hand column is fifty and expects to hold his security for 5 years; the other investor is seventy and expects to hold for the rest of his life if he does not sell now. Then turn to Table 1 and find the appropriate cell, given age and continue-holding period.

9. Value of P considering age of investor and length of continue-holding period (from Table 1)	0.00956	0.0999
10. Extra yield required from alternate security to replace, on the average, the amount of the tax (Row 9 × Row 6)	0.00478	0.01666
11. New value for S, considering estate value as well as income flow (Row 8 × Row 10)	0.063678 (i.e., 6.37%)	0.08866 (i.e., 8.87%)

Furthermore, the investor, if he wishes to use the second approach above, needs to estimate how long he plans to continue to hold his existing security.

However, the fact that these elements are difficult to estimate does not negate the value of the analysis. It still can help the investor to focus on the issues that are important and thus enable him to place the important factors in the decision in perspective rather than being misled, e.g., by identifying the maximum capital gains tax rate of 25 per cent with the necessary potential price decline.

In sum, the virtue of the analysis for most investors is that it will enable them to concentrate on the relevant factors that should be associated with making a decision to hold or switch when a capital gains tax is involved instead of being possibly misled by largely irrelevant considerations. For those who wish more precision, the formulas, charts, and tables are available.

Since security prices typically fluctuate as much as 3 per cent per month and since the investor forecasts of the rates of return that can be expected from dividends and changes in asset value are hazy, one may conclude from this analysis that the capital gains tax usually makes such a slight difference in the magnitude of the yields required to justify switching that it can easily be subsumed in the larger aspect of uncertainty regarding future yields. Or, to put it another way, if switching is considered at all, it is usually because the expected difference in combined yield between a stock currently owned and an alternative is sufficiently great that the impediment resulting from the capital gains tax will be more than overcome.

On the other hand, an investor may feel that, since he faces considerable uncertainty in forecasting the yields whenever he shifts from one asset to another, the definite fact that a yield differential—even a slight one—must be found to justify a switch will discourage him from selling one asset and buying another. This paper does not draw conclusions on the extent to which the capital gains tax actually locks investors into the stock market. It has presented an approach by means of which investors can evaluate approximately how much extra yield must be provided by an alternate security to justify selling an asset on which the investor has a capital gain.

COMMODITY TAXATION AND EQUITY

DAVID G. DAVIES
Duke University

AMONG OTHER reasons, the publication of both Professor Kaldor's book on expenditure taxation and Professor Galbraith's *The Affluent Society* has served to rekindle interest in the use of commodity taxation as a means of paying for governmental goods and services.

While recognizing that his proposal involves what he calls "another wrench in liberal attitudes," Professor Galbraith pleads for both a more intensive and extensive utilization of sales taxation. He states that "during the present century the use of sales taxation by states and cities has been growing. Liberals have ordinarily resisted its use. At a minimum they have viewed it with grave misgiving. This has again made the liberal the effective enemy of social balance."[1]

These very strong words lead us to inquire into the reasons why the liberal has an aversion to commodity taxation and what changes have occurred to prompt Galbraith to embrace the principle of sales taxation. As Galbraith implies, the roots of this resistance to expenditure-based taxation lie in the belief that such taxation fails to meet the criterion of equity. It is argued that the poor suffer a relatively greater burden than the rich. Galbraith's acceptance of the principle of sales taxation does not mean that he has suddenly changed his mind concerning its alleged regressive nature. Rather, he states that the regressivity of commodity taxation is not nearly so important in an affluent society as it was before the dawn of such a society. He reasons that where many are at a bare subsistence level of living, a tax on bread means that individuals will be hungrier. In an affluent society, where many families can buy many things, the adjustment to the tax comes at the margin in spending for goods which are over and above the subsistence level.[2]

If this reasoning is not sufficient to mitigate the modern liberal's objection to the use of commodity taxation as a means of paying for governmental goods and services, he must, at least as far as Galbraith is concerned, stand guilty of fostering the alleged present so-

1. John Kenneth Galbraith, *The Affluent Society* (New York, 1958), pp. 315–16.
2. *Ibid.*, p. 317.

cial imbalance between governmental and private goods and services. However, this paper will present some evidence that would seem to make certain kinds of sales taxes more acceptable to the modern liberal.

In the rest of this paper we propose to review some of the effects of utilizing alternative criteria for calculating an index of the equity impact of a sales tax. We shall also explore the meaning and purpose of the terms "regression" and "progression." This first requires some ground to be cleared with respect to some terminological difficulties which surround the concept of sales taxation.

The generic term "sales tax" has too often been confused with an actual operating tax. Statements and conclusions are often made about *the* sales tax, when, in fact, there is no such thing in America today. About two-thirds of the various states now collect taxes on sales, and each statute is technically unique. No state taxes 100 per cent of consumption expenditures. It is not uncommon to see written into state laws the phrase that the tax on sales will apply to tangible personal property sold at retail. This provision excludes the taxation of most consumption services. Several states exclude from the tax base all food that is purchased for consumption off the premises of the point of sale. This exemption alters the equity conclusions that one can make about commodity taxation. One may not treat consumption as the tax base and then observe that the average propensity to consume decreases as income increases, and then conclude that the tax is regressive. No hypothesis concerning the equity impact of an expenditure-based tax should be provisionally accepted unless it has been confronted with pertinent data that do not contradict that hypothesis. This elementary reminder is needed because too many writers in the past have taken the generic term "sales tax" as a description of a tax base which actually had exemptions. They treated all consumption as a tax base, applied one of Engel's laws, and then concluded that the sales tax was regressive.

Another methodological problem concerns the definitions of regressivity, proportionality, and progressivity. A few writers define a regressive levy as one in which the ratio of tax liability to tax base decreases as the tax base increases, while proportionality would exist where the ratio of tax liability to tax base remains constant as the tax base increases.[3] A progressive tax would be the opposite of a regressive levy. Using these definitions as a basis for measuring the

3. The Committee on Postwar Tax Policy, *A Tax Program for a Solvent America: Second Report* (New York, 1947), pp. 152–53.

equity impact of an expenditure-based tax, it is not surprising that some writers claim that such a tax is proportional.

Most writers define a progressive tax as one in which the ratio of the amount of tax to income (i.e., the average or effective rate of taxation) increases as income increases. A tax is proportional if the average rate of taxation remains constant as income changes, and the average rate of taxation decreases as income increases when a tax is regressive.

We use a variation of the latter set of definitions as a guide to measuring the equity impact of a tax. Given a constant legal rate of taxation, a levy is progressive if the ratio of the tax base to income increases as income increases, and it is regressive if the ratio decreases as income increases. While these definitions are explicit, most of the empirical tax structures in this paper do not coincide perfectly with any of the preceding definitions. Examination of these tax-base structures reveals that the ratio of tax base to income will both increase and decrease as income increases.

In order to obtain a general measure of equity, then, we rank the ratio of tax base to income with income itself. If the coefficient of rank correlation exceeded zero, the tax is labeled progressive. If the sign of the coefficient is negative, the tax is regressive. Since this procedure does some violence to the original definitions, it should be remembered that a positive coefficient which is less than 1 will hide elements of regressivity in the tax structure, and a negative coefficient between zero and minus 1 will hide elements of progressivity. In these cases we shall use such qualifying words as "primarily," "basically," and "generally" to modify the terms "progressive" or "regressive."

In previous papers[4] we used this method to analyze the effect of the tax on people living in states that tax food and on individuals who reside in states that exclude food from the tax base.[5] The results of this research indicated that, for the aggregate of all food-taxing states, the coefficient of rank correlation is —1.00 when ei-

4. David G. Davies, "An Empirical Test of Sales-Tax Regressivity," *Journal of Political Economy*, LXVII (February, 1959), 72–78, and "The Relative Burden of Sales Taxation," *American Journal of Economics and Sociology*, XIX (April, 1960), 291–96. For a parametric approach see Davies, "Progressiveness of a Sales Tax in Relation to Various Income Bases," *American Economic Review*, L (December, 1960), 987–95.

5. There is a tendency for jurisdictions that exempt food to be more liberal with other exemptions than the states that tax food. Whether these non-food exemptions make the pertinent tax less regressive or more progressive is largely unknown. In Ohio, however, these exemptions make the tax less regressive or more progressive, but they do not exercise as strong an influence as the food exemption in pushing the tax toward progressivity.

ther gross[6] or net income is used as the criterion for judging whether a tax is regressive or not. Under this criterion, then, we concluded that the tax in these states is regressive. It should be pointed out, however, that each state has at least one and frequently two income classes under a progressive rate. The coefficients for each state are all negative, but none are at —1.00.

In those states which exempt food not consumed at the point of sale, the rank correlation coefficients for gross and net income are —0.50 and —0.44, respectively. In the middle-income classes, which are $2,000–$3,000 through $6,000–$7,500, only one state displays a negative correlation coefficient. This statement holds true, no matter whether gross or net income is used in the calculation. The sales levy is still primarily regressive for the over-all tax schedule, but its structure is quite different from that for the food-taxing states.

In addition to examining the effect of exemptions on the tax base, one of the principal burdens of our previous investigations was an attempt to focus attention on the use of alternative income concepts to calculate the regressivity or progressivity of a tax. Such an alternative to either gross or net income is disposable receipts[7] or the Irving Fisher concept of income. Succinctly put, disposable receipts or Fisher income is equal to consumption.[8] As Professor Kaldor points out, the idea of taxing an individual in accordance with what he removes from, rather than contributes to, net national product dates back at least to Hobbes. Mill, Marshall, Fisher, Pigou, and Einaudi favored this idea, but most of them dismissed this as administratively infeasible.[9]

We do not advocate that our income tax laws be applied to consumption. But just as those who claim that an average of gross annual income over several years is a more equitable tax base than using a single year's income to calculate personal income tax liabilities, we have sought some kind of an average income concept to calculate the equity impact of a sales tax.

Given society's predilection for the ability-to-pay principle, perhaps the best measure of long-term equity would be a comparison of

6. The difference between gross and net income is the personal tax component. For a complete definition of the net income concept used here see *Study of Consumer Expenditures,* I (Philadelphia: University of Pennsylvania, 1956), xxvii–xxix.

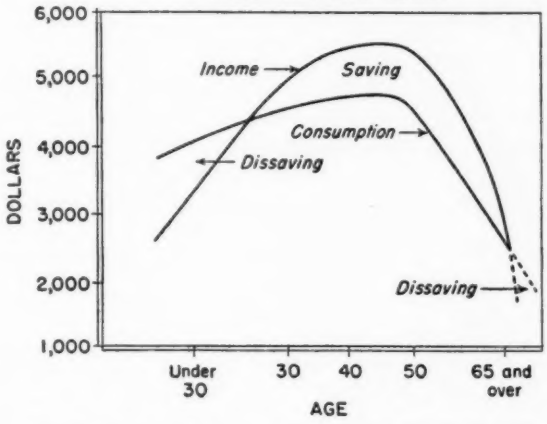
7. Disposable receipts are defined as net money income plus (assets sold + liabilities incurred) minus (assets sold + liabilities disposed of).

8. Irving Fisher and Herbert W. Fisher, *Constructive Income Taxation* (New York, 1942), pp. 24–27.

9. Nicholas Kaldor, *An Expenditure Tax* (London, 1955), p. 11.

different individual's ratios of lifetime sales taxes paid to lifetime income earned, but this information is not available. Fisher income, or current consumption expenditures, however, reflects more than just a proportion of the current year's income. All the average propensity to consume statistics for the lowest-income group in the sample under consideration exceed the value of 1 when gross or net income is used. One jurisdiction in the sample has an APC which is almost 4. The relationship between past income and consumption

CHART 1: INCOME AND CONSUMPTION OVER THE LIFE CYCLE



Source: *Business in Brief* (The Chase Manhattan Bank), No. 28, September–October, 1959, p. 5.

must have been such that saving was positive in order to allow a current decrease in assets, or the expectation of future income exceeding consumption permits liabilities to be incurred currently. The decision to incur liabilities and/or decrease assets stems from an attempt to straighten out the consumption pattern relative to the more variable annual income.

A glance at Chart 1 shows how changing liabilities and changing assets are used in connection with changing income levels to straighten out consumption. The annual income of the low-income recipients underestimates their average income over time, and vice versa. The very young purchase more consumption goods and services and pay more consumption taxes now, not because relatively low present income warrants a continuation of the APC exceeding 1, but because future income expectations are such that liabilities

can be incurred now. The older individuals can decrease assets in the present and currently consume more than their relatively low incomes would permit because they had positive saving in the past.

We discovered that, when disposable receipts or Fisher income was employed as the standard by which to adjudge the regressivity or progressivity of a tax, the coefficient of rank correlation between the ratio of the tax base to Fisher income and Fisher income itself was -0.17 in those states that tax food. While this reveals a slight degree of regressivity for the whole range of incomes, the ratio of the tax base to Fisher income rises continuously from the \$0–\$1,000 through the \$3,000–\$4,000 income classes. The correlation coefficient for states that exempt food was $+0.89$, which indicates that the tax structure is strongly progressive.

Another alternative to gross or net income for use in deriving the equity effects of a tax is the concept of permanent income.[10] Permanent income is similar to Fisher income, in that it envisages a longer planning period than one year. Permanent income is similar to gross or net income, in that it includes saving as the residual between income and consumption. It incorporates within its structure variables other than just current annual income in an attempt to explain consumer behavior.

We have calculated rank correlation coefficients for the two sets of states when permanent income is used as the criterion for calculating a measure of equity. The results are $+0.33$ for food-taxing states and $+0.94$ for those jurisdictions that exclude food from the tax base. On the permanent income criterion, the levies are basically progressive in both types of taxing jurisdictions.

Up to this point we have weighted the influence of each income class equally when calculating the data which form the basis for deriving the rank correlation coefficients. We have ignored such factors as the distribution of population, number of families, and the amount of income in each income class. In deviating from the orthodox definition of progression and regression, however, we are thrust directly into a consideration of these factors. This problem arises because we are willing to label a tax structure progressive (regressive), even though the coefficient of correlation has a value other than $+1.00$ (-1.00). Any time the coefficient varies from $+1.00$ (-1.00), there is at least one income class under regression (progression), and we do not, therefore, have a perfectly progressive (regressive) tax structure. Under such conditions the prob-

10. M. Friedman, *A Theory of the Consumption Function* (Princeton, 1957).

lem of considering such variables as the distribution of individuals or numbers of families in each income class may then become quite important if policy-makers are interested in actually achieving the redistribution of income goals that they originally set for themselves. Much more information than the general label "progressive" or "regressive" is required when designing "equitable" changes in an empirical tax structure.

Many actual tax structures probably have coefficients other than +1.00 and do not, therefore, fit the conventional definitions of progression and regression. The necessity of taking into consideration such factors as the distribution of population is not confined to isolated cases. Even the federal income tax, which most people would call progressive, does not have a coefficient of +1.00 when we rank individual earned incomes and average rates of taxation. It is, of course, perfectly progressive if adjusted taxable income is used as the basis for calculating the average rate of taxation, but such items as dependent allowances and blind exemptions make the tax regressive in spots when earned income is used to calculate the average rate of taxation. Some people with higher earned incomes do pay taxes at lower rates than other individuals with lower earned incomes.[11]

In a limited way, we shall illustrate some of the foregoing points by using our statistics on the various sales taxes. Chart 2 shows the number of family units and unattached individuals in the different income classes who are subject to different ratios of taxable consumption to net income in those areas which exempt food for home consumption. The width of each bar is proportional to the number of families and unattached individuals located in its income class. It is assumed here and throughout the rest of this paper that the population distribution for both the food-taxing and the food-exempting areas is the same as it is for the entire country.

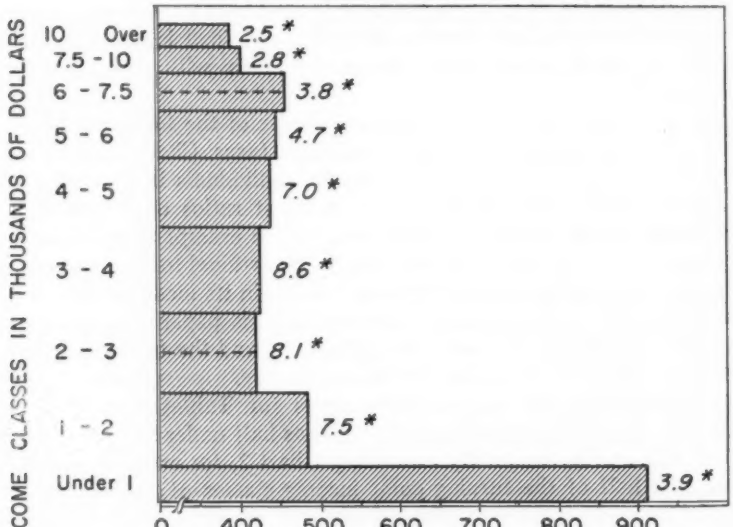
To calculate the various percentages for Tables 1 and 2, we treated the turning-point income classes as half under regression and half under progression. By examining Chart 2, for example, we can see that half of the turning-point income classes of $2,000–$3,000 and $6,000–$7,500 are considered to be under regression.

11. Even ignoring these cases of exemptions, the federal income tax extracts an equal amount of money from both those on the upper and those on the lower end of a tax bracket. An individual on the upper side of the bracket with a higher income has a lower rate of taxation than the person on the lower side of the bracket with a lower income. Of course the spread of the bracket is extremely narrow and not a target of complaint at present, but under the orthodox definitions of progression and regression the federal income tax is, technically speaking, not progressive.

It is worth noting that, despite the fact that the rank correlation coefficients indicate that the sales taxes in states that exempt food are basically regressive with respect to both gross and net income, almost half the families are subject to progression when gross income is used to calculate the equity impact of the tax, and over half the families are under progressivity when net income is used. Almost 90 per cent of the families under Fisher income and 95 per cent with permanent income are subject to progression.

Table 2 reveals that, even in food-taxing states, 35 per cent of the families are under progression when Fisher income is used as the standard to derive the equity impact of the tax, and 47 per cent under permanent income. If our discussion concerning the use of some sort of longer-term income concept than either gross or net

CHART 2: NUMBER OF FAMILY UNITS IN THE DIFFERENT INCOME CLASSES SUBJECT TO DIFFERENT RATIOS OF TAXABLE CONSUMPTION TO NET INCOME



* The number of million families and unattached individuals in these classes for the nation in 1950. The width of each bar is proportional to the number of families and unattached individuals located in its income class. The dotted lines through the $2,000–$3,000 and $6,000–$7,500 income classes show that half these classes are considered to be under regression and half under progression.

Source: *Study of Consumer Expenditures* (Philadelphia: University of Pennsylvania, 1956), and *Statistical Abstract of the United States* (Washington: Government Printing Office, 1960), p. 320.

income has any validity, these figures on Fisher and permanent income are very interesting when viewed as a basis for making policy on the redistribution of income.

Perhaps equally important for policy purposes is the evidence on the distribution of aggregate personal income. In the areas which exempt food from taxation, the percentages of total personal income under progression are 43, 51, 89, and 89 for gross, net, Fisher, and

TABLE 1*

RANK CORRELATION COEFFICIENTS, PERCENTAGE OF FAMILY UNITS, AND PERCENTAGE OF TOTAL PERSONAL INCOME UNDER PROGRESSION FOR ALTERNATIVE INCOME CONCEPTS IN FOOD-EXEMPTING STATES

	Gross Income	Net Income	Fisher Income	Permanent Income
Coefficients	−0.50	−0.44	+0.89	+0.94
Families	46%	55%	95%	95%
Personal Income	43%	51%	89%	89%

* Source: *Study of Consumer Expenditures* and *Statistical Abstract of the United States, 1960.*

TABLE 2*

RANK CORRELATION COEFFICIENTS, PERCENTAGE OF FAMILY UNITS, AND PERCENTAGE OF TOTAL PERSONAL INCOME UNDER PROGRESSION FOR ALTERNATIVE INCOME CONCEPTS IN FOOD-TAXING STATES

	Gross Income	Net Income	Fisher Income	Permanent Income
Coefficients	−1.00	−1.00	−0.17	+0.33
Families	0%	0%	61%	67%
Personal Income	0%	0%	35%	47%

* Source: Same as Table 1.

permanent income. In the jurisdictions which tax food, the percentages for the respective income concepts are 0, 0, 35, and 47. The figures for gross and net income open up some implications with respect to income-stabilization policy in the short run. It may be possible, even where the distribution of income and the marginal propensity to consume out of disposable income remain relatively constant, for a tax to be labeled regressive and yet act as a strong automatic stabilizer if enough income is bunched into income classes that are progressive but part of an over-all regressive tax structure.

In conclusion, we have seen that, even if we could get general

agreement on the twin value judgments of progression and income as the proper criteria by which to adjudge the equity effects of a sales tax, there are still very definite problems concerning the specifications of each criterion when we are confronted by actual tax structures. When redistributional questions are to be analyzed, the arguments for employing either Fisher income or permanent income in lieu of gross income or net income are not without appeal. In fact, while not now generally used as an income criterion, many individuals might well prefer the use of some kind of average income concept such as Fisher or permanent income to calculate the equity effects of a sales tax if they were aware of such an alternative. We have also observed that if policy-makers are to find satisfactory solutions to problems of the redistribution of income and if the tax structure is not perfectly progressive or regressive, serious problems arise in locating and weighting those income classes that make the structure less than perfect.

Viewed from within this general framework, empirical statements about the equity effects of sales taxes must be couched in a plethora of qualifications. Broadly speaking, however, the results of our investigations show that it is only in food-taxing areas and then only with gross and net income that we have rank correlation coefficients of -1.00. In all other cases the tax is either imperfectly regressive or actually progressive. In one instance in the food-exempting states where the tax is regressive, although not perfectly so, over half the people actually are under the progressive part of the tax structure. In general, however, regressive characteristics appear most commonly in food-taxing states, while progressive characteristics dominate the jurisdictions which exempt food from taxation.[12]

12. It is interesting to note that the vast majority of states that have adopted a sales tax since World War II have incorporated a food exemption into the tax statutes.

ABSTRACTS OF DOCTORAL DISSERTATIONS

REDISTRIBUTION OF GOLD RESERVES BETWEEN FEDERAL RESERVE BANKS*

DAVID B. MCCALMONT
Ohio State University

DURING 1960 THE United States experienced an outward drain of gold reserves which aroused unprecedented public interest. This dramatic illustration of the effect of payments disequilibrium on reserves serves to highlight the curious fact that the general public in the United States has never had occasion to worry about the loss of gold reserves from one Federal Reserve district to another.

Each Federal Reserve bank is a separate bookkeeping and corporate entity. As such, each is individually required to maintain gold reserves against its separately calculated note and deposit liabilities. Why, then, have not individual Reserve banks ever suffered reserve impairments serious enough to come to general public attention?

The reason is not to be found in the fact that all parts of the United States make use of a common monetary unit. In spite of this fact, individual Reserve banks would have shown impairment of reserves if they had not helped each other by exchanging earning assets for reserves, either directly or through the System Account.

During World War I and its aftermath, this inter-Reserve-bank assistance took the form principally of the purchase from each other of rediscounted customer paper—an operation which may best be called a "re-rediscount." However, the Reserve banks also exchanged acceptances for reserves.

Since 1923, except for a brief revival of the practice in 1933, there have been no re-rediscounts. However, during the 1920's the Reserve banks continued to purchase acceptances from each other and now and then government securities.

It was during this period that the System Account emerged as the most important mechanism for exchanging earning assets for gold

* A dissertation completed at Johns Hopkins University in 1960.

reserves. From 1934 to the present time (1961) this has been virtually the only mechanism used for that purpose. Since 1936 the Federal Open Market Committee has systematically reallocated the banks' individual participations in the Account, sometimes for the purpose of equalizing the banks' earnings and sometimes for the purpose of strengthening the gold reserves of individual banks.

Changing conditions have given rise to many changes in the formulas used in making these reallocations. Whatever the formulas employed, however, the reallocations have very frequently tended to move individual reserve ratios nearer to equality.

This has been especially true since 1953. During this period the securities in the System Account have been redivided every April 1 in such a way as to make each bank's percentage participation in the System Account equal to the percentage that its total assets were of the System's (on the average) during the previous 12 months. If the only balance-sheet items of Federal Reserve banks were the four which dwarf the rest (namely, gold reserves, investments, Federal Reserve note liabilities, and deposit liabilities), this kind of reallocation would always move all individual gold-reserve ratios into complete equality with each other and with that of the System as a whole.

During various periods from 1936 to 1953, reallocations were made semiannually, quarterly, monthly, or even weekly—depending on the urgency of making adjustments in the earnings or reserves of individual Reserve banks.

Thanks to this virtual pooling of gold reserves, individual Reserve banks have never needed to take any district-wide restrictive credit action to protect their reserve positions. More time has thus been given for the operation of equilibrating commercial and financial forces.

The experience of Federal Reserve banks in equalizing individual gold reserves through redistribution of participations in a pooled investment account suggests the possibility of establishing an international "system account" for the central banks of participating nations. By this means, disturbing gold flows of the kind which confronted the United States in 1960 might be avoided. In order for such a plan to work successfully, however, the nations concerned and their central banks would have to enter into unprecedentedly far-reaching agreements surrendering a large part of their monetary and fiscal independence of action.

THE FINANCIAL DEVELOPMENT OF JAPAN, 1878–1958*

DAVID J. OTT
Southern Methodist University

THE FIRST PART of this study traces, over eight crucial decades of Japanese economic development, the growth of primary securities issued by non-financial spending units in Japan and net purchases by Japanese intermediaries of these primary issues. The following features emerge: (1) external finance, as evidenced by the ratio of net issues to income in each cycle period, increased in importance during 1878–1958 and averaged about 16 per cent over the whole period; (2) cycle period issues-income ratios, excluding 1947–54, were very closely related to the rate of growth of income and a trend variable; (3) annual issues-income ratios during the period 1900–1958 were fairly closely related to the rate of growth of income, a variable describing sharp changes in the ratio of net liquid assets to income, and a stock price-index variable; (4) the ratio of primary securities outstanding (measured at issue prices) to income rose sharply from about 0.90 in 1885 to 2.00 just before World War I, to 3.00 in the 1930's, fell sharply to about 1.00 in 1946 and 1954, and rose to 1.50 in 1958; (5) financial intermediation generally had an upward trend from 1878 to 1958 and averaged about 62 per cent over the whole period; (6) the monetary system's share in primary security issues showed no upward or downward trend over the eighty-year secular period, so that this intermediary lost ground relative to non-monetary intermediaries; (7) as a group, financial intermediaries purchased large proportions of national government bonds, local government bonds, corporate bonds, and miscellaneous long- and short-term debt, but only a minor proportion of corporate stock issues; (8) public intermediaries were of considerable importance in Japan but showed no long-run tendency to grow relative to other intermediaries after 1900; and (9) interest rates, judging from data for the period 1900–1936, were closely related to the ratio of liquid to total financial assets of domestic, private, non-financial spending units.

In the second part of the study, the broad contours of Japanese economic development are compared with those in the United States

* A dissertation completed at the University of Maryland in 1960.

during the last century. The comparison portrays a general similarity in the pattern of financial development in the two countries. The one major difference centers on public intermediaries—they seem to have been of much greater relative importance in Japan and were important there early in the growth process, whereas in the United States they have become important only since 1929 and even yet are not so important as in Japan. The Japanese issues-income ratio was somewhat higher than the United States, but this undoubtedly reflects a higher rate of growth of income in Japan, which, in fact, led to both countries' having similar ratios of outstanding primary securities to income. Both countries, however, experienced nearly identical average indirect finance ratios, and both ratios displayed an upward trend. In both countries the monetary system grew more slowly than its non-monetary competitors, and in both cases intermediaries as a group generally preferred the same types of primary securities. Finally, there is evidence that intermediation in both countries affected the level of interest rates by affecting liquidity of the financial assets of non-financial spending units.

The over-all similarity of the pattern of financial development in the two countries basically reflects high rates of growth of income over long periods. This means that there had to be, and were, moderate amounts of primary security issues and financial intermediation to make financial asset accumulation more attractive to those with excess incomes at rates of interest compatible with a high rate of real growth.

THE DEMAND FOR AND THE SUPPLY OF NON-FARM RESIDENTIAL MORTGAGE FUNDS, 1960–70*

DONALD H. SAUER
Indiana University

THE PRODUCTION OF housing services contributes to the advancement of levels of living, the accumulation of wealth, and the expansion of economic activity—all of which are assumed to be desirable national objectives. The production of housing services, on the other hand, depends heavily on mortgage financing. Hence, in a very real sense, the future progress—both qualitative and quantitative—of the American economy will be influenced by conditions in the residential mortgage markets.

This study attempts to project and relate potential residential financing requirements for the decade of the 1960's to the potential supply of residential mortgage funds. The study (1) identifies forces likely to be of major significance in the housing and residential financing fields during the period 1960–70 and (2) presents projections of reasonable levels of demand for and supply of residential mortgage funds based on assumed rates of growth in aggregate business activity, financial institutions, and housing requirements. The question for which an answer is sought is "What levels of demand for non-farm residential mortgage funds may be reasonably expected to prevail during the period 1960–70, and from what sources can these funds be expected to come?" In answering this two-sided question, no attempt is made to project the gross flows of funds into residential mortgages. Rather, the emphasis is on net flows, i.e., the net increase in mortgage debt outstanding during the period.

The study builds on the basic premise that the demand for housing services is the primary determinant of the demand for residential mortgage funds, although other motives for borrowing by pledging residential real estate as security are also discussed briefly. While the study is essentially forward-looking, it necessarily includes examination of past relationships of seemingly pertinent variables. Judgments with respect to future relationships are based on these examinations.

* A dissertation completed at Indiana University in 1959.

Projections of the demand for funds included are based on number of households and debt per household, number of new housing starts, and dollar volume of residential construction. While the projections of debt outstanding by 1970 vary with the method and with changes in assumptions, the low, medium, and high projections for each of the methods fall between $265 billion and $320 billion.

Projections of the supply of funds result from judgments of the potential asset growth of the four principal types of financial intermediaries—commercial banks, life insurance companies, mutual savings banks, and savings and loan associations—and of the proportions of their total assets invested in *residential* mortgages.

The principal conclusions, drawn from what currently appear to be reasonable assumptions, include (1) an increase in residential mortgage debt outstanding to a total of around $300 billion by 1970; (2) an absolute increase in the dollar holdings of all current investors in residential mortgages; (3) a continuation of the trend toward greater "institutionalization" of residential mortgage debt; and (4) a continuing increase in the importance of savings and loan associations as suppliers of residential mortgage funds relative to commercial banks, mutual savings banks, and life insurance companies.

The medium projections of mortgage debt holdings of the four principal types of intermediaries show combined holdings in 1970 of $266.8 billion distributed as follows: mutual savings banks, $34.8 billion; commercial banks, $37.3 billion; life insurance companies, $57.2 billion; and savings and loan associations, $137.5 billion. If total residential mortgage debt outstanding in 1970 reaches $310 billion, as suggested by the medium projections based on projected dollar volume of residential construction, individuals and other investors—treated as a residual in this study—would hold $43.2 billion or 13.9 per cent of the total outstanding. The four principal types of financial intermediaries would thus hold 86.1 per cent of the total outstanding in 1970 and would account for 88.2 per cent of the net flow of funds into residential mortgages during the period 1957–70.

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Business Finance

Financing the Natural Gas Industry. By RICHARD W. HOOLEY. New York: Columbia University Press, 1961. Pp. x+218. $6.50.

Developments in the natural gas industry since the end of World War II have been spectacular, and the financial side of the story well deserves the consideration accorded by this study. For perspective in viewing the arrangements to finance pipeline construction, the author has outlined the basic long-term economic trends with respect to natural gas. These trends are then analyzed in terms of the likely prospects for the next few years.

Attention is centered on the important role that life insurance investment policy has played in shaping credit terms and conditions to facilitate the recent expansion of the natural gas industry. Reliance on the funds of a few large financial intermediaries rather than a host of individual investors made innovation in the terms of investment contracts relatively easy. To be sure, the author voices an interest in the basic questions stemming from the institutionalization of savings and investment, but the actual scope of this monograph is quite narrow. An earlier version of the text was presented as a doctoral dissertation at Columbia University.

For purposes of illustration, a very substantial portion of the study is devoted to the promotion and financing of two giant natural gas transmission enterprises, namely, Texas Eastern Transmission Corporation and Trans-Continental Gas Pipe Line Corporation. In tracing the detailed history of these two projects, the author refers extensively to official sources of information, as well as a large volume of unpublished information pertaining to the individual cases.

The discussion of life insurance investment policy in this treatise stresses the work of the Armstrong Committee in New York State more than fifty years ago. Usually the committee is remembered for its disclosures about practices then prevalent in the life insurance business. However, the committee recommendations with respect to investment policy have become deeply imbedded in statutes and regulations. So it would seem desirable from time to time to review the consequences of the committee's investment philosophy and perhaps to reconsider the application to current problems.

Basic credit quality is one of the important facets of gas industry financing covered at some length. Questions regarding credit quality are always relevant in any financing, but there is a tendency to ignore them in prosperous times. After calling attention to the good performance record for natural gas securities, the author observes that ". . . experience alone is not a satisfactory guide to the soundness of these investments." Adequate tests for quality refer perforce to investment standards that reach beyond actual experience to probable eventualities.

The volume includes a bibliography and notes that promise to be useful for research purposes.

RAYMOND E. HENGREN

Rockville, Maryland

Business Cycle Indicators, Vols. I and II. Edited by GEOFFREY H. MOORE. Princeton: Princeton University Press, 1961. Pp. xxxv+757; xvii+179. Vol. I, $12.50; Vol. II, $4.50.

These volumes represent a milestone in the development of indicators. They initiate a change from 21 to 26 in the NBER list. Twenty of the new list were on the old or are closely related substitutes for dropped series. Carloadings were dropped, and the 6 added series represent labor conditions, inventory investment, plant and equipment expenditures, and deflated GNP.

The change in indicator lists, although of wide interest, is but a minor part of the contribution rendered: The volumes incorporate the principal studies with relation to indicators. As a result, many of the chapters represent, largely or wholly, reprints of "classical" articles. The books are thus "designed primarily for reference rather than to be read as a continuous report." Authors covered are Moore, Fabricant, Burns, Morris, Mitchell, Beckett, Hultgren, Zarnowitz, Bry, and Shiskin.

Volume II furnishes descriptions, information on sources, and seasonally adjusted data for the 26 indicators, as well as for other series representing similar economic processes. Also, data are included on a substantial number of diffusion indexes, covering most of the 25 indicator groups, as well as some broader combinations.

Many questions about indicators that may never have occurred to interested persons are answered. For instance, the wide range of ways in which a "diffusion index" can be developed are explained. Different "spans" of time measured in the percentage-expanding series are summarized on pages 66–70 of Volume II. Several comparisons are given between cumulated or smoothed versions with both percentage-expanding and duration-of-run series. Frequent explanations are given for differences in "choppiness" of diffusion series.

Never before has the NBER gone so far in an effort to explain the differences in timing of indicators by arguments founded on the nature of economic processes. In a chapter authored by Zarnowitz new material appears on why orders data should lead anticipations. On pages 63–69 of Volume I, Moore explains why he believes each of the 12 leading indicators now included in the selected list should lead.

The NBER indicators are, to an increasing extent, becoming available on an effortless basis. Leonard Lempert, director of Statistical Indicator Associates, issues weekly charts on the 26 indicators. Julius Shiskin, of the Census, presents a monthly confidential report to various government offices on indicators and complementary foreshadowing statistics related to the economic outlook. Fewer and fewer forecasters now attempt to get along with a GNP model unsupplemented by some kind of turning-point model. We should note, however, that emphasis is placed on the help that indicators give in recognizing "events about the time they occur" rather than in providing "much advance notice."

The rich treasures found in these volumes should be clearly apparent. A likely complaint is that selections from such diverse sources as those represented here cannot hang together like a co-ordinated volume might if one author were wholly responsible. However, the value of having ready reference to so many valuable articles is an offsetting factor. Also, for this reviewer at least, the trend of thought seemed to be surprisingly well sustained. In spite of recognition of the importance of the economic processes themselves, criticism is that the analy-

sis is still too empirical to provide a true explanation. The meaningful processes of economic change need to be identified. Possibly we may properly say that specialization on empiricism is necessary in developing indicators.

ELMER C. BRATT

Lehigh University

Insurance

The Sun Insurance Office, 1710–1960. By P. G. M. DICKSON. New York: Oxford University Press, 1960. Pp. xiv+324. $7.20.

This book makes a unique contribution to business history, as no other private enterprise of today has endured for 250 years. Although the Bank of England was chartered sixteen years before the Sun, it is a central bank serving other banks and the government and was nationalized in 1946. Some marine insurance was underwritten prior to 1710, but there were no formal organizations until 1720.

P. G. M. Dickson has made a very careful study of all available regards about the Sun Insurance Office, especially during the eighteenth and nineteenth centuries. These show the extreme informality of the Sun's organization and its very low overhead prior to 1891, in spite of a growth of annual premiums to over £1 million with insurance in force of over £370 million. All major policies, such as rates, types and amounts of risk accepted, the opening of foreign agencies and branches, reinsurance contracts, and expenditures for fire protection, were decided by a group of twenty-four managers. During the first ten years these managers owned all the shares, but after 1720 some shares were sold to other stockholders. The latter participated in no meetings, had no part in selecting the managers, and seemed content merely to receive dividends from time to time. All stockholders had unlimited liability until 1926. The managers were assessed a number of times during the first ten years to cover fire losses, but there is no mention of a general assessment after 1720. In 1813, the Sun gained the right to sue and be sued as an entity. In 1806, the staff at the head office numbered 26, in 1866 it was 56, and by 1880 it was 69.

The Sun was a pioneer in establishing rates for factories with inventories, warehouses, and risks outside London, not only in other parts of England and Scotland but elsewhere, including parts of Western Europe, Asia Minor, India, China, Hong Kong, Japan, the Philippines, Australia, New Zealand, the West Indies, and Chile. When the Sun entered Canada and the United States in the 1880's, considerable work on rates had already been done by domestic and foreign predecessors. Prior to 1850, co-operation among companies in determining rates came to naught. It was looked upon with distrust as a monopoly practice in that period dominated by the theory of competition of Adam Smith. Yet the elimination of cutthroat competition, which made reserves insufficient to meet a large fire loss, was essential, and gradually effective associations were formed.

Fire-fighting personnel and equipment for London were largely financed by the Sun until 1865. It purchased fire engines for other communities. It also struggled with problems of water supply.

The Sun's early investments, including lottery tickets and South Sea bonds,

are a far cry from sound finance. Even its mortgages on lands of nobles often had to be foreclosed. Later, greater emphasis was placed on government securities, including those of foreign governments, which were often a requirement for a foreign agency. As industry grew in importance, industrial stocks and bonds also became a significant part of the investment portfolio.

This book shows (1) how slowly the idea of fire insurance was accepted; (2) how the Sun was generally conservative in its acceptance of risks and tried to set rates comparable to the particular risk; (3) how much the Sun's business depended on the development of business and industry, as only a small part of its fire insurance was on homes; and (4) the importance of personnel as a keynote to its success.

The book is more suitable for the graduate student who is willing to hunt, organize, and synthesize than as collateral reading for the undergraduate. Many details with regard to buildings occupied and personnel are tedious. It is largely a historical record and lacks discussions which would be highly beneficial to the student of insurance and finance. For example, why did the company refuse to publish any records prior to 1891, especially as this policy interfered so much with the growth of its foreign business? Why did it maintain unlimited liability until 1926? Why did it criticize the insurance brokerage system so severely? Why does the Appendix Table of Premiums and Losses cover only the period from 1743 to 1891? The Hanover Fire Insurance Company's *Proudly We Say* (a history from 1852 to 1952) and James Marquis' *The Biography of a Business* (the Life Insurance Company of North America from 1792 to 1942) are preferable outside reading for the undergraduate. They are more interesting, give better explanations of insurance practices, and discuss investment policy more adequately. Both books show how managers are trustees for both policyholders and stockholders, whereas the managers of the Sun seem to ignore the other stockholders. Members of the American Finance Association cannot disregard the Sun history but will probably find a cursory reading sufficient.

HELEN C. POTTER

Loyola University, Chicago

Ensuring Medical Care for the Aged. By MORTIMER SPIEGELMAN. Homewood, Ill.: Irwin, 1960. Pp. xxiv+280. $6.25.

The question of whether to provide medical care for our aged population as a national service is one we are going to be faced with for some time to come, and probably urgently in the next few years. Its political overtones are already nagging us, and its social implications have been presented as a national problem.

Mr. Spiegelman's contribution to the debate on guaranteed health care for the over-sixty-five group is not a contention for one side or the other. It is rather a careful and studious analysis of the available statistics on medical-care needs and coverage and some provocative suggestions as to how to decide what it is we really want.

The opening chapter sets forth the data on demographic, social, and economic characteristics of those over sixty-five. There are over 15 million of that age group at present in the population, and there will be roughly 25 million in another 20 years. Now they represent less than 9 per cent of the population; by 1980 they will be at least 10 per cent. This is a group in which the incidence of extended illness is higher than average, of course. And, because of the fashion

of retirement at sixty-five on a reduced income, a long illness can mean a devastating economic experience.

How frequently major illness strikes has been measured in a number of local surveys, as well as in nation-wide studies. A national health survey, which extended over a year and unearthed much interesting data on the health status of people of all ages and income classes and of their use of medical-care facilities, is cited extensively by Spiegelman. A sample survey by the National Opinion Research Center reveals much about utilization of, and attitudes toward, medical-care facilities. These and a number of other studies and surveys systematically set down present a picture of the problem that we are dealing with.

The chapters dealing with medical-care expenses and how they are met indicate that, while we incur tremendous national health bills, which truly fall unevenly, there are numerous ways of meeting them. The better-known voluntary organizations insuring against medical-care expenses covered 123 million people in 1958, and no doubt this number is well above 125 million out of our 180 million population today. That is 70 per cent of the population. The proportion among the aged is probably not so high as this, but this proportion will tend to grow in the future as more and more plans permit workers to continue their coverage on retirement.

The final chapter of this well-constructed book poses provocative questions of economic and moral significance. The advances in medical science have increased the chances of survival to extreme old age for a larger and larger segment of the population. This has put a heavy burden on our limited health facilities, and offering free medical service to 15 million people will not relieve it. Spiegelman tells us something of how strained our medical services are and suggests: "Clearly, whatever deficiencies the United States has in this regard should be made up in substantial degree before benefits are promised en masse" (p. 254). Other questions bearing on the cost of such a service, its implications for universal free medical service, and the resultant death of voluntary health insurance qualify this chapter, if not the entire book, as required reading for legislators who may shortly have to stand up and be counted.

MARY VIRGINIA BROWN

New York City

International Finance

The Foreign Tax Credit. By ELISABETH A. OWENS. Cambridge, Mass.: Harvard Law School, 1961. Pp. xxxi+634. $20.00.

This volume is part of a comprehensive research study relating to the role of taxation in international trade and investment conducted by the Harvard Law School Program in Taxation in co-operation with the Fiscal and Financial Branch of the United Nations Bureau of Economic Affairs. Because of the very substantial growth of foreign investment and trade by American business in recent years, the problem of eliminating the burden of multinational taxation as a barrier to the free flow of international investment and trade is of prime importance. One of the most important of the several policies adopted by the United States to mitigate the problem of international double taxation has been the allowance of a credit for foreign income taxes against the domestic income

tax. This book is a comprehensive technical analysis of the United States Code and treaty law on the tax credit. Indeed, it is the first intensive and seemingly definitive study made on the American foreign tax credit. By 1957, the tax credit claimed by Americans exceeded the $1 billion figure, or approximately 5 per cent of the total corporate tax liability, and daily it grows larger.

The introductory chapter covers the history, functions, and basic rules of the foreign tax credit, along with the business and tax decisions involved in the application of the credit provisions. The next seven chapters analyze in detail various underlying credit problems, such as what types of foreign taxes are creditable, the calculation and tax consequences of the indirect credit for taxes paid by foreign subsidiaries, the computation and operation of the limitation on the credit, the time at which the credit may be taken, who is entitled to the credit as the taxpayer of a foreign tax, the rate of exchange used to convert creditable taxes, the credit for resident aliens, and the effects of income tax treaties on the credit. The administrative requirements, including the forms for claiming the tax credit, are covered in detail. The final chapter is devoted to the formulation of the income tax law with respect to foreign source income and the issues involved in the taxation of the latter income, such as equity considerations and preferential tax rates as an instrument of government policy. Appendix I discusses the recent changes in the law enacted September 14, 1960. Appendix II covers decisions concerning qualification of taxes listed by countries. Finally, a detailed bibliography is provided.

In 1918, the United States was the first nation to apply the foreign tax credit on a world-wide basis as a means of alleviating the international double taxation of income. Today, such major countries as Canada, Greece, India, Israel, Japan, Mexico, Pakistan, the Philippines, Turkey, the United Kingdom, and West Germany grant unilateral tax credit against their income taxes, and other nations accomplish the same by tax treaty. While this book is limited to the American law and situation, it is useful to any other nation that either has a foreign tax credit law or is contemplating one.

The book is very well written and is thoroughly documented. It should be a highly invaluable reference work for tax lawyers and accountants, businessmen and investors, as well as economists, fiscal analysts, business administrators, and political scientists. All in all, it constitutes a very basic addition to the hard-core literature of the social sciences.

ERVIN K. ZINGLER

University of Houston

Foreign Exchange in Canada: An Outline. By SIDNEY A. SHEPERD. 3d ed. Toronto: University of Toronto Press, 1961. Pp. xii+267. $5.95.

This volume is an updating of the book originally published in 1953 by Mr. Sheperd, at that time manager of the Foreign Exchange Department of the Bank of Montreal. The book was written shortly after the freeing of the Canadian exchange rate in 1950 and the discontinuation of Canadian exchange controls at the end of 1951. It was intended primarily for members of the business and financial community who had occasion to make use of the foreign-exchange market but whose knowledge of its operation was limited following the long period of exchange control. The updating consists primarily of the addition of an 8-page concluding chapter entitled "Highlights 1953–60 and the Future"

and the incorporation of more recent data in the appendix tables on Canadian reserves and exchange rates.

Aside from the first three chapters giving the background of the freeing of the foreign-exchange market in Canada and the new concluding chapter, the book concentrates almost exclusively on the mechanics of the foreign-exchange market. Included is material on the institutional setting of the Canadian markets, the operation of spot and forward exchange markets, and the instruments used in foreign exchange and foreign-trade transactions. Only a limited amount of the material concentrates on the specifically Canadian aspects of the market; much of it is a description of the international system of exchange transactions and trade financing that grew up prior to the 1930's and that has been re-established in part in recent years. Emphasis is placed primarily on transactions with the United States and secondarily on those with the United Kingdom, not only because of their importance in Canadian trade but also because of the magnitude of exchange restrictions in most areas at the time the volume was written. The book includes advice on covering exchange risks in commercial transactions, on relationships of customers with their banks, and on safeguards in the use of letters of credit. It does not, however, take up questions of the details of financing customarily associated with specific types of trade.

The book suffers in scope and emphasis from the limited amount of revision that has taken place. Most of the chapters give clear evidence of having been written when exchange restrictions in most areas were more extensive than today and when there was considerable question as to how Canada itself would fare under a system of free exchanges, and the occasional footnotes and textual notes which have been added do not overcome the difficulty. It is also to be regretted that so little material is included on short-run and long-run factors affecting Canadian exchange rates. Little attention is given to the operations of the Exchange Fund Account and even less to the character and fluctuations of Canadian imports and exports, the nature of its long-term capital movements, and the factors affecting short-term capital movements. The new concluding chapter touches very briefly on the operation of some of these factors in the 1953–60 period, but readers of all types would benefit from a more extended discussion.

The volume includes copies of forms used by a leading bank, presumably the Bank of Montreal, in connection with foreign-trade financing and several appendixes on the computation of exchange rates that should prove useful to commercial users.

MONA E. DINGLE

Washington, D.C.

Taxation and Operations Abroad: A Symposium Conducted by the Tax Institute. Princeton: Tax Institute, Inc., 1959. Pp. x+308. $6.00.

Part I is devoted to the effect of taxes on the determination of the form of business organization to be used for operations abroad. Separate papers consider this problem in relation to export trade, service and contract agencies, and extractive industries. The advantages and disadvantages of a Western Hemisphere trade corporation, a foreign corporation, a branch operation, and a domestic or foreign subsidiary corporation are discussed. The effects of the

Boggs bill are frequently interjected. The major problem areas are pointed out, but time and space limit a detailed analysis of them. Alternatives are offered, but help in making the final decision falls short.

Part II deals with selected economic problems. Such general questions as the following are raised: Should we encourage foreign trade and investment? To what degree? Does it, for example, improve allocation of capital among countries, or does it, rather, encourage inefficiency on a world basis? These questions are designed, I think, to raise doubts in the mind of the reader as to the importance of tax considerations in foreign investment decisions. For example, attention is given to the question of just what these tax costs are. By implication, the reader is asked whether tax costs today have really been placed in proper perspective. Included in Part II is a discussion of the justification for foreign tax credit—the criteria including the purpose of the allowance, equity, and its effect on capital flow and shifting of incidence. Finally, the Boggs bill is again analyzed and questions raised about its influence on the policy of the Internal Revenue Service.

Part III is concerned with current issues of foreign taxes. What are the present and potential effects of the Treaty of Rome? What are the opportunities of Bahamian facilities? What are the dangers inherent in the ever present possibility of exemption termination? What are the opportunities in Canada, and particularly Canadian investment companies?

Part IV is devoted to what United States policy should be toward granting tax incentives for foreign investment. Representative Boggs presents the case for his bill. Representatives of government, private industry, and the ivory tower present their views, which are remarkably in accord as far as the desirability of tax incentives are concerned, even though the means of achievement may vary.

An impressive group of experts participated in this symposium. As far as pointing out the major problem areas is concerned, the gamut appears to have been run. Intensive investigation of any particular problem is necessarily left to the reader. A defect of the book is perhaps its weakness in problem *solution*. Of lesser importance, the reader may be disturbed at times by the lack of continuity and some tendency to repetition. Some will argue that only the case *for* tax incentives was presented adequately. Sufficient differences of opinion were expressed, however, to make the book thought-provoking. It merits reading by anyone concerned with foreign investment, in whatever capacity.

FRANK GRANER

University of Wisconsin

Money and Banking

Techniques of Monetary Control. By JOSEPH ASCHHEIM. Baltimore: Johns Hopkins Press, 1961. Pp. ix+164. $4.50.

This excellent volume attempts to evaluate and summarize the significant positive issues relating to central-bank monetary control in postwar United States. Where pertinent as background material, the author draws upon technical literature of the 1930's and 1940's and occasionally compares or contrasts American experience with that of other countries. For the most part, however, this is incidental to the prime importance assigned to current domestic

issues of monterary controls, and the technical literature consulted and quoted is essentially that of the United States during the past decade.

In addition to examining the nature and usefulness of traditional quantitative instruments of monetary control (open-market operations, varying reserve requirements, rediscounting, and moral suasion), the author deals intensively with problems of (1) supplementary security-reserve requirements; (2) the "bills-only" doctrine versus maturity variations in Federal Reserve bank portfolios; (3) the use of automatic penalty-rate mechanisms as opposed to discretionary rediscount rates; (4) the position of commercial banks in contrast to that of financial intermediary institutions; and (5) central-bank treatment of time deposits in commercial banks. Chapter 4 ("Open Market Operations: 'Bills-Only' Doctrine and Economic Stabilization") is of decidedly current significance because of the recent attempts on the part of Federal Reserve authorities to vary the structure of government securities held, so as to put downward pressure on long-term rates while maintaining or increasing short-term rates. Aschheim is decidedly critical of policies confining Federal Reserve open-market operations to short-term government securities both because it may contribute to international balance-of-payments difficulties and because he believes that, in denying itself access to "swapping operations, the central bank is handicapped in contributing to economic stability" (p. 81).

Throughout the volume but particularly in the first chapter, the author attempts to provide "an over-all view of the efficacy of monetary controls" (p. 2). Efficacy appears to be a positive rather than a normative concept related to judgment of the potential success of a particular control technique, skilfully employed, to achieve a particular objective. The desirability of the objective is simply not discussed. The author thereby avoids treating of criteria for proper or desirable monetary standards and questions of whether or not some form of automaticity is to be preferred to administratively discretionary monetary powers. The delightfully titled chapter, "The Persuasiveness of Moral Suasion," for example, has no normative counterpart concerned with "The Amorality of Moral Suasion." Thus confined to positive issues, those who wish to extend discretionary monetary authority to virtually all financial institutions will find little or no support in this book. It should prove decidedly valuable to teachers, of course, in advanced money and banking, government finance and money markets. Careful perusal by the "experts" is heartily recommended. In fact, although the recent report of the National Commission on Money and Credit undoubtedly will receive greater attention, within its narrower limits this volume is decidedly superior.

ARTHUR KEMP

Claremont Men's College

Die Goldmärkte der Welt seit Verlassen des Goldstandards. By HERMANN BARTELS. Frankfurt am Main: Fritz Knapp Verlag, 1960. Pp. 265+7 appendix tables. DM. 34.80.

Barely a generation after the "barbaric relic" seemed to have been safely buried, gold has come back to haunt Washington. Not that gold was ever regarded as "dead" outside the Anglo-Saxon world, but such is the impact of let us call it "organized thought" that for a generation professional economists (with few exceptions), "liberals," government officials (including key men of

the Federal Reserve) and even bankers have looked upon gold as an unfortunate relic of a unenlightened age. The resulting blind spot in American thought contributes to the present national paralysis in dealing with the balance-of-payments problem.

It is thus helpful to have—at least in German—a brief history of what happened to gold during the eventful decades since the abandonment of the gold standard.

The book—originally a Ph.D. dissertation written under the well-known German monetary economist Heinrich Rittershausen—was published by the Institute of Banking and Banking Law of the University of Cologne. Happily free from the pedantic style of so many dissertations, it deals with the material in three major sections: (1) the various gold markets since the abandonment of the gold standard; (2) the nature of the demand for and supply of gold; and (3) the price trends of gold in the free markets. More than 750 footnotes substantiate the findings. The author has gathered together a great deal of material that is not otherwise readily available and has drawn some interesting conclusions, including the observation that gold is not necessarily the best hedge against inflation. During the years 1913–49 an American or a Swiss could have protected his purchasing power about equally well by putting his money in a 3 per cent savings account or by buying non-interest-bearing gold. In most other countries, however, gold proved a far better inflation hedge. By 1957, when the gold price had declined and savings deposits through interest accruals had reached 367 per cent of the 1913 nominal value, savings deposits turned out to be more advantageous than gold in the United States, Switzerland, Britain, and Sweden. At the high 1947 prices, gold was definitely not a good investment. Gold coins—such as French Napoleons and German 20-Mark pieces—turned out to be a better investment since the 1930's than gold bars, because the premium over the bar-gold price increased because of the steady demand of the small hoarder.

On the basis of the experience of the last 50 years, the author concludes that gold is not a satisfactory hedge against creeping secular inflation. It offers protection against galloping inflation and may provide a quick profit in case of an official upward revision in the gold price (e.g., from $35 to $70), which the author does not anticipate but which many monetary economists advocate as the only feasible method of improving international liquidity.

The comprehensive picture of the various gold markets since World War II and their trading methods—London, e.g., specializes in bars and Paris in coins—should make helpful reading for those American economists, politicians, and officials who suffer from the misconception that gold markets are "black markets" (implying moral disapproval), rather than free markets where prices change under the influence of changing supply and demand. All efforts to suppress these free markets—including the provisions of the Bretton Woods Agreement which prohibit central banks from buying and selling gold at free-market prices—have proved futile not merely during the last fifty but during the last two to three thousand years. Postwar Paris returned to a free gold market as early as 1948, and, by this time, ownership and trading in gold are legal in virtually all European countries. Aside from the Communist nations, it is primarily the United States, officially the champion of economic freedom, that maintains the most rigid restrictions on gold.

A helpful statistical appendix and 4½ pages of a (heavily, but not exclusively, German) bibliography add to the value of the book as a handy source of reference in an area where material is not readily available in this country.

G. C. WIEGAND

Southern Illinois University

Il Mercato del denaro di New York. By RENATO GUADAGNINI. Padova, Italy: Cedam Casa Editrice Dott. Antonio Milani, 1960. Pp. viii+204 (paper). n.p.

This is a concise, yet solid, thorough, and highly competent treatise of the banking structure of the United States as it is particularly evident in New York. The only flaw that I was able to find in this book is its style, which I found unnecessarily heavy, ponderous, and pedantic. I think it should be possible to write a book in Italian with a lighter, more elegant, and appealing pen, even though it is on such a topic as the United States credit organization.

Obviously, it was not the author's intention to be either original or constructively critical in his presentation of the subject. His supreme aim is objectivity. Having received a scholarship to study at close range the monetary and credit markets in the United States, it is evident from this study that he did not waste a single moment of his time. While in New York, he must have made a number of valuable contacts. He probably worked for a while as an observer in some bank and read a great deal of literature on the subject. The result is this book, which strikes me as one of the best textbooks for a course in money and banking that I have seen.

The design of the book is the usual one with which we are all familiar: introduction; history of the United States money and banking structure; banking operations, with special emphasis on the activities of the Federal Reserve System; social and political objectives and controls placed at the command of the System; and the management of the public debt.

Because this book was written by a non-American, probably a young one, it is of interest to discover the features of our banking system that impressed him most. They are (1) the functions and operations of dealers in government bonds, which he finds "extraordinary," probably because they offer luminous evidence of the application of criteria of independence and freedom in our investment markets; (2) the 1946 Employment Act, with its seemingly conflicting goals of economic stimulation, full employment, and currency stabilization; and (3) the contribution of the press in the dissemination of financial news. This, he finds, manifests more than anything else the character, strength, and vitality of our way of living.

The Bibliography is more than adequate, and it is a blessed relief to see a book of this sort without the handicap of a single solitary footnote.

CARLO MARIA FLUMIANI

Boston College

Central Banking in Undeveloped Money Markets. By S. N. SEN. 3d ed. Calcutta, India: Bookland Private Limited, 1961. Pp. xi+294. Rs. 20.

Professor Sen has presented us with a third edition of his well-regarded work of the same name, which first appeared in 1951. Basically, the book is

a study of the techniques of monetary management that have been adopted chiefly in the developing members of the British Commonwealth of Nations. The work is of especial interest, in that it reveals the problems involved in trying to transfer the monetary arrangements of the industrialized countries to areas having very different institutional conditions and very different types of economic development, as represented by India and Australia.

The new edition provides additional chapters on the general problems of selective credit controls and an account of Indian experience with selective controls. Another new chapter carries the story of the Australian special accounts method of monetary control to its conclusion in 1960, when the more orthodox method of variable reserve ratios finally replaced it. Sen has altered a few of the other chapters, but in essence the work is the same.

In the developed countries central banking has been concerned with the regulation of the money market in terms of the cost, availability, and supply of money. The role of the central bank was originally to avoid financial crises. From this, it has moved on to considerations of price stability and the maintenance of full employment. Central banks in the developed countries have never been conceived as engines for economic development. Transferred to the underdeveloped countries as mere agencies of regulation, central banks increasingly have had to contend with the ever mounting pressures that they act to secure rapid economic development. Sen's study as of 1951 foreshadowed these pressures. However, he has decided in this new edition to leave post-1950 developments to another work. Doubtless, he is right in feeling that the new emphasis requires a new book. The role that central banks have assumed since 1950 relative to the increased demands of the underdeveloped nations for rapid development is a fascinating story, and one can but hope that Dr. Sen will eventually present us with this story.

A. MORGNER

University of Southern California

The Changed Structure: A Different Picture of the Monetary Economy. By MARCEL SUCHESTOW. Zurich: Verlag P. G. Keller, 1960. Pp. 174 (paper). S. Fr. 21.40.

This work questions both the effectiveness of Federal Reserve policy in the postwar period and the force of central-bank monetary policy generally. It argues that the "changed structure" of our economy in the past decade (i.e., sharply increased savings and their concentration in the non-bank sector) makes the limitations of central-bank credit control very plain, especially if the analysis avoids the usual (unwarranted) assumption that the line of causality is from Federal Reserve action to a response by the rest of the economy.

Accordingly, an alternative approach is suggested, based on the distinction between the "credit range" of the banking sector and the "money-disposal range" of the whole economy. Series for the period 1947–57, both monthly and annual, are then reported for: (1) the credit range of the Reserve Banks (total Reserve credit minus total deposits); (2) the credit range for all commercial banks (total loans and investments plus member-bank reserves minus total liabilities); and (3) the money-disposal range of the economy (seasonally adjusted total demand deposits plus currency outside the banks).

On the basis of these calculations it is concluded (*a*) that the Federal Reserve System and, indeed, the whole commercial banking system dispose at best of only a minor portion of the total supply of money and credit; (*b*) that even within this narrow margin the banks are powerless to change their credit range—aside from changes in their capital accounts (which merely redistribute earnings within the banking sector but do not affect the economy's money-disposal range); and (*c*) that the banking system can adjust to money and credit supply as determined autonomously only by the level of economic activity. Thus what have been regarded as "lags" and even perversities in response to Federal Reserve action were in reality independent and quite unrelated changes in economic activity, for which the money authorities too readily assumed the credit or blame.

Most of the twenty-seven brief chapters in the book are devoted to seeking historical and theoretical support for the conclusions stated above. But the author is led, logically enough, to touch on a number of points never definitively settled in monetary theory. He repeats Cassel's assertion that idle balances cannot exist for the economy as a whole. Moreover, he flatly denies that banks have, as usually alleged, the power to create money, and he cites as proof four occasions in the last decade (1949, 1953, 1954, and 1958) when a reduction in reserve requirements was followed by an increase in bank credit amounting to less than the freed money, let alone by a multiple expansion.

But the treatment of these and other interesting and pertinent issues is too brief, while the discussion of excess reserves, open-market, and other Federal Reserve operations tends to be largely repetitious, despite good documentation. One ventures to suggest that more of the space might more profitably have been devoted to such matters as (*a*) exploration of the English banking controversies of a century ago, which have an affinity at many points to the present discussion but to which no reference is made, and (*b*) more detailed consideration of the impact of price-level changes on the validity of the analysis and the interpretation made of the empirical evidence. For example, in the tabulation of the growth in aggregate savings and investment (p. 34), the fact that a good half of the increase occurred in business depreciation charges, which are particularly inflation-sensitive, is passed by without comment.

LOUIS M. SPADARO

Fordham University

Inflation. By THOMAS WILSON. Cambridge, Mass.: Harvard University Press, 1961. Pp. 280. $3.00.

In the first seven chapters of this volume, Professor Wilson examines the subject of inflation from an analytical point of view, on the assumption that there are no monetary or fiscal policies promulgated by the central bank and the government, an ample supply of funds being available at the banks. Under these assumed conditions, he considers inflation (and deflation) as a phase of the business cycle. Inflation and deflation are viewed as resulting from inconsistency of plans, and some natural limits to instability are examined.

Chapters v through vii are devoted to an amplification and more detailed analysis of demand inflation, repressed inflation, and cost inflation. One interesting point made by the author in regard to the latter is that cost inflation may

continue to push up prices, assuming an adequate supply of money, if wage increases in excess of productivity are general, but will be less successful in so doing if such increases are confined to one or two industries or a limited number of plants. In any event, cost inflation cannot continue without an increase in the effective supply of money sufficient to permit the sale of products at successively higher prices.

In chapter viii, Professor Wilson discusses inflation in Russia; the remaining seven chapters of the book are devoted to a detailed analysis of policies, chiefly governmental, designed to secure stability in the purchasing power of the nation's money.

After considering changing views on policy, dealing with the shift in emphasis from fiscal policy to credit control, three chapters are devoted to an analysis of the latter. Although credit control is deemed to be worthwhile, the author emphasizes the fact that it cannot be relied upon solely as an inflation-prevention device. Considerable space is devoted to changes in velocity as a deterrent to effective control by the central bank. The author admits that the supply of money could be decreased sufficiently to offset an increase in velocity, but he feels that such a policy would not be tolerated by the government. What would be effective—a return to the old-fashioned gold standard—is something not seriously to be considered in Wilson's opinion.

Since credit policy is only partially effective, a combination of it with proper fiscal policy should be attempted, through varying tax and/or social security payments and influencing the prices and yields of investment securities through open-market operations.

Even a proper combination of credit and fiscal policies is not sufficient, in the author's opinion, and he considers other forms of planning—suggesting, among other things, the possibility of socialized wholesaling as practiced in Russia. He admits that there is little likelihood of its adoption by Western countries, but, in his final chapter, he does feel that something might be done in controlling costs and prices through a national wage council.

The reviewer, who believes that the government should confine its economic activities to maintaining a competitive system with a minimum of interference, finds himself out of sympathy with the author throughout the last half of the book. It seems especially ironical that the Adam Smith Chair of Political Economy in the University of Glasgow should be held by such an avid planner as Professor Wilson.

FREDERICK A. BRADFORD

Lehigh University

Public Finance

Taxation in India. By W. W. BRUDNO, C. K. COBB, JR., and N. A. PALKHIVALA; with the aid of R. M. EIGNER and L. D. HOLLMAN. Boston: Little, Brown & Co., 1960. Pp. xxiii+555. $15.00.

This volume is one of the "World Tax Series," prepared by the Harvard Law School International Program in Taxation in consultation with the United Nations Secretariat. Like previous reports in the series, it is a valuable work of reference. Students of comparative taxation and persons with a special interest in the revenue system of India will be grateful for the clear and orderly

presentation, the documentation, and the careful definition and explanation of terms. The book makes conveniently available information that heretofore could be obtained only by an expert with access to an unusually good library.

The book includes a fairly detailed statement of the provisions of the principal taxes imposed by the central, state, and local governments of India, with special attention to the income tax. An introductory section presents background material on Indian history, government, and economic conditions and a synopsis of the fiscal system. The work is descriptive; no attempt is made to analyze the economic effects of the taxes, and only passing reference is made to the policy considerations that led to the adoption of various tax provisions.

Two of the most novel features of the Indian tax system are the net wealth tax and the personal expenditure tax, which were enacted in 1957 on the recommendation of Nicholas Kaldor of Cambridge University. Although these taxes yield little revenue—only 2.5 per cent of central government tax according to 1959–60 budget estimates—they have attracted much attention. The descriptions of the two taxes are adequate but might well have been supplemented by the reproduction of the return forms (as is done for the income tax). Readers who are particularly interested in the new taxes may wish to refer also to R. M. Eigner, "Indian Income, Wealth and Expenditure Taxes," *National Tax Journal*, XII (June, 1959), 151–62.

RICHARD GOODE

Brookings Institution

The Public Finances: An Introductory Textbook. By JAMES M. BUCHANAN. Homewood, Ill.: Irwin, 1960. Pp. xvi+553. $7.50.

The economics library used by this reviewer contains more than a dozen textbooks on public finance published or revised during the past decade. Of this number, only three or four appear to have prospered as commercially viable products in this intensely competitive market. The high attrition rate suggests the muscle that a newcomer needs to shoulder its way into this limited circle.

The Buchanan entry is characterized by some worthy features. Perhaps the leading one is the emphasis given to the theory of public expenditure. A large fraction of the content of the book is devoted to this topic—one that is frequently dispatched in a chapter or two. Theory is also emphasized in other respects, such as intergovernmental fiscal relationships. Musgrave's sectoring of the fiscal process seems to have influenced the subject outline. Buchanan's review of public expenditure and receipts appears to be consonant with the major propositions of modern welfare economics. These aspects give the work a thoroughly modern air. The book has true intellectual content.

For some types of courses the text would not be well adapted. The author says in his Preface: "This introductory textbook does not contain sufficient historical, institutional, or analytical detail to provide the student with the full understanding of the fiscal system that is required for competent evaluation." Even more serious, the chapters devoted to institutional description do not have the ring of authority that characterizes the theoretical chapters. A few factual errors mar the institutional sections.

Another shortcoming of the text is that it reflects a relatively naïve view

of the monetary process. For example, the author implies that the proportion of currency to deposits in total money supply is influenced by government issue policy (p. 350). Comments on the term structure of interest rates show little historical perspective and no awareness of the considerable literature on this subject (p. 364).

Several important subjects are treated briefly or not at all. For example, erosion of the tax base is mentioned casually in the middle of a paragraph on the next to the last page of the text. No mention whatsoever is made of the excess profits tax or of the taxation of undistributed profits. The significance of tax exemption in state and local government borrowing is covered with three routine sentences. The taxation of small business organized as proprietorships or partnerships (or special circumstances in which some closely held corporations may file as partnerships) is given no attention.

The author has used his textbook as a platform for the vigorous expression of a number of quite individual views. The author's treatment of the national debt is, at least, accompanied by a warning that his views are not widely accepted. However, on a number of points the author has emphasized one side of a controversial issue without recognizing adequately the existence of other views. For example, his almost flat-footed view that the corporate income tax is largely shifted to the owners of corporate enterprise and that the sales tax tends to be shifted backward to the factors of production is not accompanied by an adequate recognition of opposite views. Several times the author wistfully mentions the "lump-sum" tax as "ideal," even if politically unacceptable.

A teacher who has the time and facilities to supplement the institutional materials, to fill the gaps, and who evens the balance of views on a number of controversial issues would find the use of this text a quite interesting experiment. If these requirements were not met, the experiment might have less happy results.

ROLAND I. ROBINSON

Washington, D.C.

Public Finance: Needs, Sources, and Utilization. By CONFERENCE OF THE UNIVERSITIES–NATIONAL BUREAU COMMITTEE FOR ECONOMIC RESEARCH. Princeton: Princeton University Press, 1961. Pp. xiv+512. $10.00.

Here are the texts of eleven papers presented, with comments and rejoinders, at a conference called by the Universities–National Bureau Committee of Economic Research. The book is a report and was not intended to be a monograph. James M. Buchanan, chairman of the Program and Planning Committee, points out in the Introduction that the papers pay but slight attention to the topics usually found in public finance and that they are "widely heterogeneous contributions in terms of method, scope, and level of abstraction." They appear in the same book because the Planning Committee decided that the time is ripe for public finance "in the English-speaking world" to shake off the shackles of traditional economic analysis and till the wide new field of fiscal decision-making. Thus unfettered, it may well become a new science.

The approaches, assumptions, and methods here assembled are varied enough to suit any intellectual taste. Statistics are used to project needs and sources for each level of government to 1970. A theory using input-output

analysis is derived for evaluating the economic efficiency of fiscal federalism. Sociometric models requiring thirteen symbols and six "heroic assumptions" are proposed to study the effect of federal attempts "to equalize differentials in the position of federal citizens which arise from their respective citizenships in particular states . . . a matter of political philosophy rather than economics" (p. 98). There is a study with several comments, congratulatory and critical, of metropolitan finance; here "the principal fiscal problem . . . is the difficulty of public decision-making" (p. 239). Another paper argues that the federal budgetary process, allegedly "a set of norms," falls short of being rational because man's cognitive capacities are limited and (as some admit) operations research cannot cope with the complexities of this kind of decision-making; hence we should resort to "incrementalism" (p. 305) or "partisan mutual adjustment" (p. 312). The first of two papers on defense financing proposes planning in terms of "programs"—meaning "activities that produce distinguishable products" (p. 338); the second paper reveals (perhaps more clearly than intended) that our defense organization is a complex compounded of interservice rivalry, "a never-ending process of bargaining," budgets and objectives that do not match, the criteria running all the way from deterrence to all-outness, with "game aspects . . . at every level" (p. 405).

The last paper, "A Survey of the Theory of Public Expenditure Criteria" (pp. 434–94), might well be assigned fledgling graduate students (prefaced by that definition of an economist as someone who thinks of everything at once) as a worthy example of just how theoretical (and useful) a theory can be. Such an assignment would introduce the student to a full kit of tools—techniques, criteria, and objectives—whose functions are clearly implied, although the author makes his own choice of those to be used for the purpose of this study. Furthermore, his discussion of the decision models that he selects here has an aura of realism that must be derived from his own work in resource planning.[1]

W. BAYARD TAYLOR

Claremont Men's College

1. Otto Eckstein, *Water Resource Development: The Economics of Project Evaluation* (Cambridge, Mass.: Harvard University Press, 1958).

Trends in Government Financing. By MORRIS A. COPELAND. Princeton, N.J.: Princeton University Press, 1961. Pp. xxvi+210. $5.00.

This monograph is one of a series sponsored by the National Bureau of Economic Research centered on capital formation and financing in the United States. The present study concerns the role of governments—federal, state, and local—in what is called "capital requirements"—defined as government borrowing; hence the study is concerned more with finance than with real investment. Borrowing by governments is treated as arising from government deficits, and hence the discovery of the factors that give rise to government deficits and surpluses becomes a major theme. Going back in history to 1870 and sometimes as early as 1837, the author compiles various series of United States government debts by type of government unit as well as of government deficits and surpluses, ending usually in 1954.

Given the main objective of the study, a crucial issue is the definition of government debt and hence of changes therein. In all sophisticated studies of the subject, the reported gross-debt data are manipulated to obtain net-debt figures. Professor Copeland's net-debt concept has close affinity to the flow-of-funds approach, perhaps not surprisingly in view of the author's influence in instigating that system of accounting. The debt of any one government unit is defined as its gross liabilities minus the sum of the following: (1) the amount of such liabilities owned by it, (2) the debts of others owned by it, and (3) the amount of cash held. As applied to the federal government, the net debt is the gross debt as reported, with some adjustments, minus the amount of federal obligations held by the various federal agencies and trust funds, the debts held of private organizations, individuals, and non-federal governments, and the amount of Treasury cash. A number of questions are raised by this approach.

The deduction of own-debt held by a government from a reported gross-debt figure is, of course, only proper to avoid overstatement. The crucial question in this connection is not the practice, which can scarcely be questioned, but the definition of the organizations that are a part of the government. Although the author treats federal agencies and trust funds as government, he omits—and does so without discussion—the Federal Reserve banks. Yet these agencies are scarcely private; they perform government functions and are under government control. Apart from such possibly legalistic issues, a reported increase in the federal debt of $1 billion when the entire increase is absorbed by the Federal Reserve banks does not constitute a drain on the supply of loanable funds. Such a transaction is a bookkeeping matter. Yet on Copeland's definition, it is treated as economically equivalent to Treasury sale of debt to private groups.

The deduction of the debts of private groups seems appropriate if one grants that the purpose is to show the net drain, plus or minus, that government exerts upon debt markets. It remains true that such cross-hauling in debt may be important economically in other connections, and this fact is not denied.

The most puzzling feature of the definition is the treatment of government cash holdings as "negative" debt. I found no rationale for this procedure in the study (the author seemed disinclined to take the reader into his confidence) and cannot think of any defensible one. This practice means that government actual borrowing of $1 billion is a zero increase in net debt. Since the net-debt definition is presumably designed to report on how much governments in any given period subtract from the amount or amounts of funds available for purchase of all kinds of debts, borrowing accompanied by increases in government cash balances appears just as genuine as other borrowing. Also it is an odd use of language to label a decline in cash holdings as an increase in debt. Yet the author's treatment of cash as a negative element in computing net debt must have substantially increased the work of compiling the debt series. The difference it makes is likely to be unimportant because variations in cash balances are small as compared with annual changes in government debt except for such unusual occurrences as the $20 billion reduction in the federal gross debt in 1946.

The main value of the study lies in the series on government debt and related matters, all compiled, it should be emphasized, with meticulous care. The attempt to use these data as a springboard for predicting future trends—the

topic discussed in the final chapter—gives rather meager results. In the event of wars and depressions, the author suggests that government debts will increase. If such catastrophes are avoided, the impression is given that increases in debts are believed to be more likely than decreases. An important question in this connection, one not discussed in the study, is the extent to which ideas of what constitutes proper fiscal policy have influenced government expeditures and tax policies in the past and how these ideas may change policies in the future.

The work contains almost no economic analysis as ordinarily understood; the emphasis is more on accounting and data-compiling matters. Nor is there any systematic attempt at appraising the debt experience of governments in the United States. This forbearance, as suggested by Simon Kuznets in the Foreword, may perhaps be wise, but if serious students of a subject are not to make such judgments, who then is to correct the economic confusions that pass for wisdom about government debt in influential financial circles?

EARL R. ROLPH

University of California
Berkeley

Personal Deductions in the Federal Income Tax. By C. HARRY KAHN. Princeton: Princeton University Press, 1960. Pp. xxix+237. $5.00.

Tax specialists will welcome this National Bureau of Economic Research study of a subject that has recently aroused much interest. The book contains a brief legislative history of the personal deductions and a careful examination of the relevant statistics, with previously published data conveniently summarized and supplemented by many new estimates. Sources and estimation procedures are clearly described. Professor Kahn discusses the influence of the deductions on taxpayers' behavior and notes criticisms and possible revisions of present tax law but presents no recommendations.

The personal deductions include non-business tax payments, interest on personal debt, philanthropic contributions, certain medical expenses, casualty losses with respect to non-business property, and (largest of all) the standard deduction allowed those who do not itemize their deductions. Although there is no authoritative statement of the reasons for adoption of the deductions, it appears that some were originally due to failure to distinguish between personal expenses and business expenses. Other deductions seem to be intended to encourage certain expenditures and still others to achieve greater equity by assisting taxpayers who are faced with certain emergency expenditures or losses. Kahn points out that a deduction can act as an incentive only if the underlying expenditures are price-elastic. This line of reasoning leads him to ask whether tax credits—which would grant the same tax reduction, or "price reduction," to almost all taxpayers—might not be more suitable than deductions as a means of stimulating philanthropic contributions and other expenditures that we may wish to encourage.

The ratio of personal deductions to income does not vary greatly between income classes. Before World War II the deductions tended to rise in relation to income from the bottom to the top of the scale, but this tendency has been overcome by the introduction of the standard deduction and the medical deduc-

tion and perhaps also by the spread of homeownership and the concomitant increase in deductions for mortgage interest and property taxes.

Kahn estimates that in 1953 the elimination of all personal deductions would have permitted income tax rates to be reduced by almost five percentage points in each bracket without loss of revenue. This is an interesting measure of the size of the deductions, but, as the author emphasizes, such a revision would not change real rates of taxation on the average or as applied to marginal increments of income. Tax liability would be redistributed between individuals with large and small deductions, and the reduction of nominal rates might have psychological and political advantages. The built-in flexibility of the income tax would be slightly reduced, inasmuch as personal deductions tend to fluctuate less than income during recessions and recoveries.

RICHARD GOODE

Brookings Institution

Die Ehegattenbesteuerung. By LORE KULLMER. Frankfurt am Main: Vittorio Klostermann, 1960. Pp. 133. DM. 18 (paper).

This study (in German) was conducted in Germany and the United States during the years 1955–58, when a change in the personal income tax laws of the German Federal Republic was being discussed. Basically, the new laws provided for income splitting for married couples as against the previous practice of taxing the income of an entire household. Lore Kullmer's objective is twofold: (1) to trace the historical development of personal income taxation in Germany and the United States in this respect and to analyze both systems critically, and (2) specifically to consider the main forms of the taxation of married persons, to weigh their impact on the family unit, and to discuss them in view of the switch to income splitting in Western Germany.

In her well-documented study Lore Kullmer fulfils her objective by giving the reader a detailed comparative overview over German and United States tax laws regarding married couples and by conceptually testing their provisions, past and present, against key questions, such as fairness of the tax method to married persons vis-à-vis their single counterparts; impact of the provisions on high- and low-income couples; discrimination between married couples and other household units (a problem particularly present in Germany because of the disruptive impact of the war on families); impact of tax provisions on governmental revenues, administrative problems for the government; etc.

Especially useful is the section in which the author discusses in detail six basic methods of taxing married persons (combined income with fixed exemptions; combined income with progressive exemptions; income splitting; dual tax schedules; individual taxation; and the United States combination of income splitting and individual taxation). A summary table (pp. 66, 67) graphically illustrates the main drawbacks and advantages of each, and the author's discussion of these tax methods is presented in a well-ordered conceptual scheme.

The main orientation of the study is sociological and historical—a thoughtful effort to establish relevant criteria by which to judge taxation schemes—and the conclusions are based on those broad criteria. The author defines the family unit as the relevant tax basis, which theoretically calls either for taxing household income after suitable exemptions or for some form of income splitting. While not accepting any method as of itself ideal, she agrees with the German

switch to income splitting as a suitable compromise, carefully pointing up the need for properly delineating the definitions of eligible persons, the setting of tax rates to strike the proper balance between low- and high-income couples, and the establishment of rules and regulations dealing with special problems, e.g., unmarried persons with financial family obligations.

The study could have been enhanced by such statistical data as numbers of persons involved, estimated revenue differentials, etc., under the various systems. The student of taxation nevertheless will find the book both interesting and helpful, because of its comparative nature, which shows many parallel problems of taxation in Germany and the United States, and its orientation toward a broad integrative approach to taxation.

ERICH A. HELFERT

Harvard University

Financial Administration in Local Government. By A. H. MARSHALL. Toronto, Canada: University of Toronto Press, 1961. Pp. 392. $4.50.

Mr. A. H. Marshall is city treasurer of Coventry, England, and a past president of the Institute of Municipal Treasurers and Accountants. He writes from long experience in many phases and techniques of public financial administration. This volume is a competent and fluent exposition of the financial affairs of British local goverments. As the title suggests, the emphasis is upon administration: that is, ways and means of effectively handling money collections and payments. The book is not concerned with problems of revenue sources and evaluations of expenditures by local authorities.

English local government is unique in two features. There is, first, a single body—the elected council—which is vested with both the power to determine policy and the responsibility for executing it; and, second, heavy reliance is placed upon committees in the performance of these functions. Members of the council serving on various committees plan the work and employ and supervise the personnel of the government departments. Except in the smallest authorities, such as the parish council, there is a finance committee and also a finance department with an appointed chief financial officer in charge. A study of these two local government units furnishes the principal subject matter of this book.

In the first three chapters Marshall outlines the general organization of local authorities and the makeup and functions of the finance committee. He emphasizes that the administration of finances is not an end in itself but that the work of both finance committee and finance department must be closely integrated with that of all departments in the authority. Nine chapters deal with the chief financial officer: his professional training and status, his relation to the finance committee, his departmental organization, his staff, and his duties as advisor, auditor, accountant, etc. Considerable attention is given to means of recruiting and training clerical and accounting staffs and to the introduction of accounting machines and electronic computers. In the next two chapters, problems of interdepartmental financial co-operation are presented, with discussions of the financial duties of the clerk of the council and the accounting work undertaken by the operating departments. Each of the last eight chapters is concerned with some specific financial activity, such as pay-

ment of accounts, collection of income, purchasing and contracting, budgetary procedures, and rules for internal administration.

The work of local authorities, the internal setup of finance departments, and statutory provisions for handling finances are described in six attached appendixes. This information is helpful to the American or other reader who may not be familiar with English government and statutes.

Marshall is unusually skilful in the art of organizing the details in a complex subject. He establishes a framework for the orderly arrangement of his materials and rigidly adheres to it throughout the book. Each chapter begins with a statement of its purpose. Through a number of subdivisions the ideas are developed and effectively summarized at the end. Within each subdivision this same pattern is followed. Thus, despite the unusual amount of detail, the main facts stand out clearly and with a compelling interest that carries the reader along. The result is a book which, though designed to aid British local authorities in their work, should nevertheless be of real value to all government accountants, treasurers, and other financial officials. The fact that the author largely avoids technical accounting and financial terms further enhances the usefulness of the work, making it suitable for non-professional readers and students of government affairs.

JANET L. WESTON

University of Illinois

Public Finance. By EARL R. ROLPH and GEORGE F. BREAK. New York: Ronald Press, 1961. Pp. viii+586. $7.50.

One expects competence in the work of Professor Rolph, the senior editor of the present work, and one also expects of him something quite different from the traditional presentation. Neither expectation is disappointed by this volume.

Professors Rolph and Break take a comprehensive approach to public finance. In a half-serious way, we might suggest that the title of the work would more accurately be "Economics with Particular Emphasis on Public Finance." There is practically no statistical or institutional material; there is much analysis with accompanying geometrical figures. The subject matter ranges from a succinct presentation of pricing theory via transformation and indifference curves (pp. 368 ff.) through the "Economics of Metropolitan Living" (chap. 19). The positions taken are often bold (but this does not mean new or indefensible), e.g., "In principle, gifts and inheritances result in gains to the recipient and should be included in his total taxable income. . . . The inclusion of gifts and inheritances in the income of the recipient would not imply that they should be made deductible from the income of the donor" (p. 129).

There is heavy emphasis on recent materials, e.g., in the consideration of "Income Averaging [over years] for Tax Purposes" (p. 143), but no presentation of some of the experiences of the past with this concept (e.g., the Wisconsin income tax of the 1920's and early 1930's) and the attendant problems.

Following this approach, there is a neat presentation of neoclassical international trade theory in connection with import and export duties (pp. 310–22) that would enhance many texts in principles of economics.

There are some oddities, e.g., in speaking of excess profits taxation, the authors say (pp. 254 ff.): "Procurement officers are likely to be, and in fact are, rather casual about the financial expense of obtaining the material desired by

the military departments. . . . It is impossible to estimate how much larger government expenditures actually turned out to have been . . . because of the practices of procurement officers who included an excess profits tax allowance in government contracts." No evidence is given, and this reviewer can vouch from his own experiences in Air Force procurement during World War II, that the statement is preposterous.

If we can summarize the major weakness, it is that the authors have a distaste for dirtying their hands with empirical data and a greater aversion to examining administrative and similar problems.

The book is not likely to enjoy wide use as *the* text in public finance courses, but the volume will give excellent service as collateral reading. Frequently such a comment is meant to damn with faint praise. This is not so in the present case.

ERWIN ESSER NEMMERS

Northwestern University

The Economics of Public Finance. By PHILIP E. TAYLOR. 3d ed. New York: Macmillan, 1961. Pp. xviii+588. $7.50.

This is another revised edition of Professor Taylor's somewhat pioneer attempt in 1948 to accent the predominantly economic aspects of public finance with the full realization that the political and sociological aspects of the subject cannot be ignored. The author has successfully integrated the findings of current literature on fiscal controls with the traditional information on public finance. The text is designed for use primarily in a one-term course and, as such, is not encyclopedic in its treatment.

In the current edition, the policy discussions are oriented toward conditions of moderate instability in which anti-inflationary policies receive equal treatment with underemployment proposals. Nevertheless, the new emphasis on the problems of growth as well as on the age-old issue of resource allocation in an era of big government is not neglected. New chapters on the budget as an allocative instrument and on the critical problems of state and local governments add to the timeliness of this work. Other major and worthwhile revisions include an analysis of the possibilities of strengthening the federal personal income tax to permit it to assume a more major role in the future and an explanation of the alternative measurements of fiscal operations in the conventional budget, the cash budget, and the national-income accounts.

The introductory chapters review the growth and trends of public finance, in particular of expenditures, at the different levels of government. They are set against a background of fiscal programs to avoid economic stagnation and to promote stability. This section is followed by the new chapter on the resource-allocation functions of the public sector. Three chapters are devoted to the public debt—its management, its burden, and its role in the money supply. More than half of the text deals with revenues and presents, in the more or less usual way, standard material on the shifting and incidence, the characteristics, and the theoretical and administrative problems of taxes on property, personal and corporate income, sales taxes, death and gift taxes, business taxes, and taxes on employment. The concluding chapter provides the separate treatment of the problems of state and local government finance.

Value judgments are expressed throughout, with the intent of satisfying stu-

dents' demands for conclusions and opinions. Those who prefer textbooks which describe problems rather than voice preferences for particular solutions may take issue with what seems to be dogmatism at times. For example, "taxation in order to make interest payments converts higher leverage dollars into lower leverage dollars, and thus detracts from the rate of growth" (p. 203). This statement (without any clarification) equates growth with high consumption and leads the reader to believe that income transferred through taxes from spenders to savers limits growth. Rather, we might say such transfers provide an involuntary push to growth as they result in more savings being available for investment.

While the author has succeeded in integrating the more recent developments in fiscal policy theory with the traditional mass of information relative to government expenditures and revenues, the text is not a revolutionary or radical departure from its predecessors in the field. It is particularly well designed for a course in which the emphasis is upon basic principles and fundamental issues. It is well equipped with paragraph headings and a subject index.

HELEN J. COOKE

Rutgers University, Newark College

California Local Finance. By JOHN A. VIEG *et al.* Stanford: Stanford University Press, 1960. Pp. viii+418. $7.50.

Local government in California can be quantified as 57 counties, 351 cities, the consolidated City-County of San Francisco, 1,818 school districts, and about 3,000 special districts (p. 356). Not since the 1930's has there been a thorough analysis of the local public finance "system." *California Local Finance* examines local units; states their fiscal problems; relates their plight to their economic, social, legal, and political circumstances; poses their financial alternatives; and, in indicating some of the best probable choices for them, proposes possible remedies.

Faculty colleagues Vieg, Armstrong, Farner, Rostvold, Shelton, and Thomson deal with a range of insistent questions, basically these: Is there a local finance crisis? (p. 98). What are the trends in local expenditures? By what influences are local expenditures changing and within what limits or controls? (pp. 71, 78, 108). How can local revenues be made more adequate and more equitable? (pp. 138–224). How can local government borrowing be more wisely planned and administered? (pp. 227–51). What special financial measures should be recommended for the support of education? (pp. 256–350).

By a division of labor, each writer deals with a different part of the analysis. The results are generally admirable: the whole precisely parceled, the statistical data carefully reckoned, their uses and limitations specified, the reasoning logically built, sources and authorities systematically compiled, evaluations often imaginative and generally well based, and findings and recommendations finally summarized.

There "is no operational way to determine the optimum level of government expenditures" (p. 71). Nor is there any way to determine "whether the amount spent in the public sector of the economy is allocated correctly among its various functions" (p. 75). There "is no objective way to compute such quantities

as the optimum acreage of parks per capita, the proper number of policemen per thousand inhabitants, or any other similar standard for other functions of government" (p. 78). In the absence of such an operational way, levels and divisions of spending are "a matter of values" (p. 130) and voters. "With . . . exceptions the counties are currently the weakest link in the chain of local government" (p. 356). There has been "excessive reliance on the general property tax" and lack of "a more diversified revenue system" (p. 358). The "people of California will soon have to find 'another method' of financing school construction" (p. 360). "The American ethos is libertarian, egalitarian, individualistic, and localistic. . . . The best reforms would square with all [these standards]" (p. 362). In sum: scholarly prose with a western breeze, based on an analysis of evidence.

HOMER H. HAMNER

University of Puget Sound

Real Estate Finance

Capital Requirements for Urban Development and Renewal. By J. W. DYCKMAN and R. R. ISAACS, assisted by P. R. SENN. New York: McGraw-Hill, 1961. Pp. xxvi+334. $11.50.

Based on a study of an unidentified American city with a population in the 100,000–250,000 size class, the authors estimate the capital requirements for urban development and renewal as follows: For a twelve-year period the cost (in 1958 dollars) for metropolitan areas (at least 50,000 persons each) would be $800 billion; for all urban places (at least 2,500 persons each) the twelve-year cost would be $1,300 billion.

To obtain such huge amounts of money, without great increases in taxation, would require that more money go to state and local governments and less to the national government. This shift would leave less available for armaments, foreign aid, veterans' benefits, farm subsidies, and space exploration. At the private level, consumers would need to spend less for automobiles, travel, and dishwashers and more on mortgages on new, repaired, and improved homes. Individuals would be required to pay higher costs for housing and schools.

Commercial and industrial enterprises would be required to spend more for plants and their surroundings, even if the result would be increasing fixed costs per unit of output. Amenities would be substituted for profits.

While the authors make their projections in terms of constant (1958) dollars, they admit that the investment program required for total renewal of American cities might well prove in practice to be inflationary. This would be true despite curbs on consumption.

Even greater than this huge mobilization of resources needed for urban development and renewal would be the mobilization of motives. The program must be "sold" to people who presently prefer to spend their money on comforts and luxuries that would be denied them if the authors' suggestions were followed. The authors admit that even a "hard sell" will bring no assurance of success.

Because of the admitted obstacles to changing peoples' consumption patterns and because of complications in state and local finances, the authors turn reluctantly to the federal government to accomplish more than its hoped-for

share of directing and financing urban development and renewal. If the federal government can build highways, support research and defense industries, subsidize farmers, etc., why should it not rebuild our cities?

This is not a book for the general reader. Specialists of various kinds will find interest in its bold and provocative contents, even if they are not always convinced. City planners will applaud its conclusions. Economists will wonder if we can insure the maintenance of an increasing rate of economic growth in the face of a reduction in spendable income and in the production of consumption goods. Tax authorities will be puzzled to find sufficient sources of increasing revenue called for. Even the authors express doubts about the acceptance of their program in the foreseeable future.

The problems with which the authors deal are serious. They will not be solved by neglect. This book will contribute to their solution, even if on a piecemeal basis only.

H. E. HOAGLAND

Ohio State University

BOOKS RECEIVED

BUSHNELL, JOHN A. *Australian Company Mergers, 1946–1959.* Melbourne: Melbourne University Press; New York: Cambridge University Press, 1961. Pp. xii+223. $7.50.

An analysis of the effect of the very large post–World War II merger movement in Australia upon company growth and the industrial structure of that nation. A brief comparison is made between the merger law of United States and Australia.

COHAN, AVERY B. *Private Placements and Public Offerings: Market Shares since 1935.* Chapel Hill: University of North Carolina, 1961. Pp. ix+47. $1.00 (paper).

In this excellent report the author presents hitherto unavailable data on private placement shares for three broad industry groups—rails, public utilities, and industrial-financial-services—for the period 1935–58. Tentative explanations for the behavior of private placement shares, relative to public offerings, are suggested.

COMMISSION ON MONEY AND CREDIT. *Money and Credit: Their Influences on Jobs, Prices, and Growth.* Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1961. Pp. xiv+285. $2.00 (paper), $3.95 (cloth).

A session of the annual meeting of the American Finance Association will be devoted to an analysis of the work of the Commission on Money and Credit. The papers and discussions presented at that time will be published in the *Proceedings* of the Association.

EDWARDS, JAMES DON, and SALMONSON, ROLAND F. (eds.). *Contributions of Four Accounting Pioneers.* East Lansing: Bureau of Business and Economic Research, Graduate School of Business Administration, Michigan State University, 1961. Pp. (v)+238. $6.50.

This useful volume contains an annotated bibliography of the works of Eric L. Kohler, A. C. Littleton, George O. May, and William A. Paton.

EISENSTEIN, LOUIS. *The Ideologies of Taxation.* New York: Ronald Press, 1961. Pp. v+263. $5.00.

A popularly written review of the ideological issues upon which the United States tax structure is based. Particular reference is made to the concepts of ability to pay and progressive taxation.

GRUNEWALD, ADOLPH E. *Stock Valuation in Federal Taxation.* (Occasional Paper No. 4.) East Lansing: Bureau of Business and Economic Research, Graduate School of Business Administration, Michigan State University, 1961. Pp. (vi)+104. $1.00 (paper).

An excellent study of various methods of valuing stock for federal taxation purposes. The author concludes with a special plea for the rule of reason in all valuations: "if the method or technique employed leads to unreasonable results another attempt must be made."

HOUSEHOLD FINANCE CORPORATION, MONEY MANAGEMENT INSTITUTE. *Money Management Library*. Chicago: Household Finance Corporation, 1950——. 12 pamphlets. n.p.

This series of pamphlets, written in a popular style, deals with automobile, health, housing, clothing, equipment, and other consumer expenditure activities.

KOVNER, MILTON. *The Challenge of Coexistence*. Washington, D.C.: Public Affairs Press, 1961. Pp. vi+130. $3.50.

In this volume the relationship between Soviet foreign economic policy—particularly foreign trade—and over-all Soviet international objectives is carefully reviewed.

LEWIS, RALPH F. *Management Uses of Accounting: Planning and Control for Profit*. New York: Harper & Bros., 1961. Pp. xii+139. $3.95.

An interesting explanation of the manner in which accounting practices can influence the effective operations of a firm. The orientation is toward management and the uses which it can make of accounting, rather than toward technical accounting practice.

NEDERLANDSE BANKIERVERENIGING. *Trends in Bank Credit and Finance*. The Hague: Martinus Nijhoff, 1961. Pp. vi+181. Guilders 16.

This volume contains nine lectures, ranging from a discussion of competition between commercial banks and other financial institutions to various financial aspects of the European Economic Community. The conference was sponsored by the Netherlands Bankers Association.

NEIFELD, M. R. *Neifeld's Manual on Consumer Credit*. Easton, Pa.: Mack Publishing Co., 1961. Pp. xi+592. $11.00.

The author, a former vice-president and director of Beneficial Management Corporation, one of the management companies of Beneficial Finance Company, reviews the social and economic role of consumer credit in the economy.

PRATHER, CHARLES L. *Money and Banking*. 7th ed. Homewood, Ill.: Irwin, 1961. Pp. xvi+629. $7.50.

The seventh edition of this well-known text, like its predecessors, contains a lucid, well-written explanation of the money and banking system of the United States, with particular emphasis on institutional factors.

RACITI, SEBASTIAN. *The Oil Import Problem*. ("Studies in Industrial Economics," 6.) New York: Fordham University Press, 1961 Pp. 100. $2.50 (paper).

In this penetrating study the author analyzes the position of both major and independent oil companies with respect to oil-import policies. He concludes that the areas of agreement among the two groups are greater than those of disagreement. However, no answer is presented to the question of what the oil-import policy of the nation ought to be.

SOMERS, HERMAN M., and SOMERS, ANNE R. *Doctors, Patients, and Health Insurance*. Washington, D.C.: Brookings Institution, 1961. Pp. xix+576. $7.50.

This volume provides a careful review of the impact of changing patterns of life-expectancy, illness, and consumer expectations on the practice and financing of medicine. Various plans of financing health care are analyzed, and additional problems, such as doctor-patient relationships, are analyzed.

STULMAN, JULIUS. *World Economic Development.* Washington, D.C.: Public Affairs Press, 1961. Pp. 16 (paper). n.p.

The author feels that policies designed to increase both domestic and foreign productivity are the only effective approach to combating communism.

VAJDA, S. *Mathematical Programming.* Reading, Mass.: Addison-Wesley, 1961. Pp. ix+310. $8.50.

This volume is intended as an introduction to linear and non-linear programming for graduate students with substantial mathematical training.

JAMES GILLIES

University of California
Los Angeles

ADDITIONS TO THE 1959 *MEMBERSHIP DIRECTORY*

In July, 1959, the American Finance Association published its 1959 *Membership Directory*. The following members joined the Association between April 1, 1961, and November 15, 1961. Addresses and occupations of new members may be secured from Robert A. Kavesh, Acting Secretary-Treasurer, American Finance Association, New York University, New York 6, New York.

NEW ACTIVE MEMBERS

Ahlforth, Roger
Anderson, Leslie P.
Ball, Stanley E.
Bauman, Scott W.
Black, Walter A.
Borchert, Frank R., Jr.
Borthwick, John M.
Call, Ivan T.
Carleton, Willard T.
Cramer, Wilson B.
Cromley, Jon L.
Curran, Ward S.
Currie, A. W.
Danellis, Constantine
Dauten, Joel J.
Dixon, James R.
Drake, John
Fenlon, Paul E.
Feuerher, Victor
Finn, Gene L.
Ford, Robert A.
Garvin, Lonnie, Jr.
Golembe, Carter H.
Gopen, Frank B.
Gray, Otha L.
Greene, Carl W.
Hanson, Bertil
Harriman, Gerald E.
Hawkins, Dale
Hill, Daniel A.
Hillebrandt, F.
Holstrom, Carleton A.
Holtz, James N.
Hundley, Frank T.
Huntley, Elizabeth Z.
Jacobs, Arnold R.
Johnston, Donald R.
Jones, Thomas W.
Kaplan, Marshall
Kierans, Eric W.
Lees, Francis A.
Li, David H.
Lowe, William H.
Matthews, Arnold C.
McGowan, Francis P.
Meltzer, Alan
Michaelsen, Jacob B.
Miller, Charles W.
O'Dell, Kenneth T.
Perry, G. Neil
Plachta, Leonard E.
Poplos, John C.
Potter, John D.
Ralph, John T.
Reiff, Wallace W.
Rieke, Robert C.
Rini, Charles T.
Rogers, Richard M.
Rosenblatt, Samuel M.
Rousseas, Stephen W.
Sands, Edith S.
Seibel, Robert W.
Seligman, Barnard
Sichel, Gerardo F.
Sharpe, William F.
Torgerson, Malcolm S.
Trubac, Edward R.
Van Alstyne, Dirk T.
Wertheimer, Robert G.
Wilson, Robert P.
Woodwell, William H.

NEW SUBSCRIBING MEMBERS

Akhtar, Masood
Emerson, Everett S.
Kuntz, Edward J.
Schabacker, Edgar C.

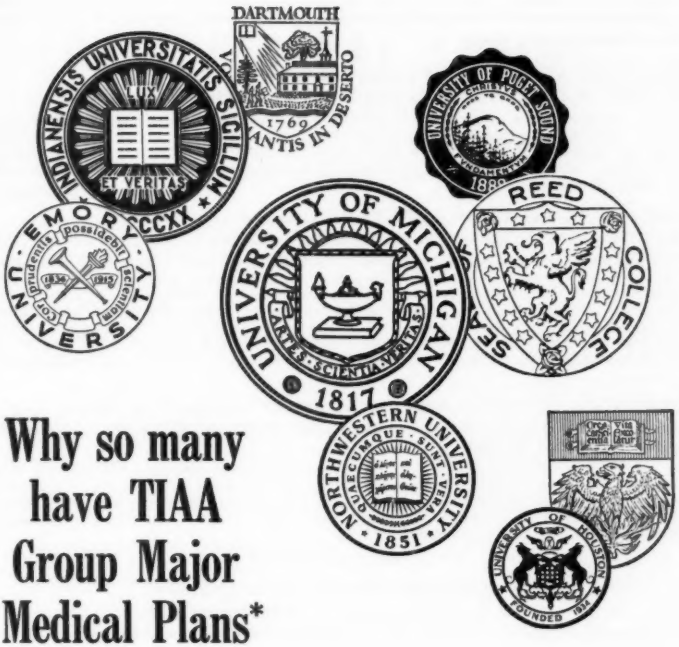
SOUTHERN FINANCE ASSOCIATION

The second annual meeting of the Southern Finance Association (a regional unit of the American Finance Association) was held in Memphis, Tennessee, on November 10, 1961. The association elected the following officers for 1962:

President—Benjamin U. Ratchford, Vice-President in charge of Research, Federal Reserve Bank of Richmond

Vice-President—William D. Ross, Dean, College of Business Administration, Louisiana State University

Secretary-Treasurer—Howard S. Gordman, Professor of Finance, Georgia State College



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Important business books

THE FIRM: Microeconomic Planning and Action
By NEIL W. CHAMBERLAIN, Yale University. Available January, 1962
This advanced undergraduate text provides a framework within which economic theory of the firm can be meaningfully set and within which business policies can most fruitfully be analyzed. It portrays the planning function as a profitable meeting ground for the scholar and practitioner. Emphasized is the importance of the planning function to the firm and the economy.

THE MANAGEMENT OF BANK FUNDS, Second Edition
By ROLAND I. ROBINSON, Michigan State University. Available January, 1962
This updated and reorganized revision deals with the central managerial problems of any commercial bank: to manage its funds profitably but with adequate liquidity. Resolution of the conflicting requirements of adequate liquidity and of profitability is the core managerial problem of commercial banks. It generalizes the problem to furnish a unified philosophy applicable at all stages of the business cycle—whether money markets be tight or loose. New chapters on: day-to-day management of money positions; investment in state and local government securities; U.S. Government security market.

PRACTICAL FINANCIAL STATEMENT ANALYSIS, New Fifth Edition
By ROY A. FOULKE, Dun & Bradstreet, Inc. McGraw-Hill Accounting Series. 913 pages, $8.95 (text edition)
In this updated edition the author presents in practical language a description of the techniques used in analyzing what is behind the figures in the four important statements used in portraying the financial condition of commercial and industrial businesses—the balance sheet, the income statement, the reconciliation of surplus, and the source and application of funds statement.

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By Eugene F. Klise, Ph.D., Miami University, Oxford, Ohio

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ASSETS

Cash and Government Bonds	$ 87,183,587.29
Government Guaranteed Loans to Veterans	70,895,715.24
FHA Insured Loans	47,106,344.46
Conventional Home Loans, and Other Loans	253,166,511.68
Federal Home Loan Bank Securities	6,496,600.00
Office Building, Land and Equipment	1,691,770.95
Other Assets	2,380,505.65
TOTAL ASSETS	$468,921,035.27

LIABILITIES AND RESERVES

Savings Accounts	$384,651,915.47
Advances from Federal Home Loan Bank and Other Sources	29,500,000.00
Tax and Insurance Account	7,830,015.27
Escrow and Accounts Payable	5,853,361.64
TOTAL LIABILITIES	$427,835,292.38
Reserved Loan Fees and Discounts for Allocation to Future Earnings	6,655,479.97
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TOTAL LIABILITIES AND RESERVES	$468,921,035.27

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This popular new textbook provides an authoritative discussion of the wide range of problems involved in the management of personal finances. In readable, non-technical style, it covers income and budgeting of financial resources, uses of credit, home buying, etc. Third Edition offers expanded coverage of estate and retirement planning; U.S. Savings Bonds; life, property, casualty, accident and sickness insurance; federal income tax law; etc. Includes a wealth of new illustrative material and practical case-problems. *Instructor's Manual available. 3rd Ed., 1961. 717 pp.* $7.50

Corporate Finance

ELVIN F. DONALDSON
The Ohio State University

A complete picture of the principles underlying the modern business corporation's financial policy and practice. Stressing management's viewpoint, book reflects the best legal and accounting advice on corporate financial policy. It fully discusses taxation and its impact on the corporation and its owners; covers forms of business organization; promotion and financing by securities; expansion and combination; short- and intermediate-term financing; etc. Case analyses, questions, problems throughout. *"A well-written and well-integrated text."*—**Denton A. Fuller,** *Alfred University. Instructor's Manual available. 1957. 876 pp., illus.* $7.50

Montgomery's Federal Taxes—*38th Edition*

By members of the organization of
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70 leading accounting practitioners and tax specialists offer top-level guidance on the tax hazards and opportunities facing business organizations and individuals. Book translates the law into practical terms—advises specific steps to take and when to take them. Citations provide immediate reference to cases, Treasury rulings and regulations, and the Revenue Code. When there is no clear precedent, where the issue of tax liability is confused or uncertain, Montgomery's offers the viewpoint sought and depended upon in professional tax circles. Checklists at the end of each chapter show how to qualify for lower tax rate, protect realizable income and long- and short-term interests. *38th Ed., 1961. 1,600 pp.* $30.00

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REAL ESTATE • Frederick E. Case • 1962

This new text, to be available in January, presents the basic theory, and the most effective methods of applying that theory, to solving problems relating to urban land uses. Expressly written for a first course in real estate, it includes the latest information from research in land economics, regional science, and real estate.

BUSINESS ADMINISTRATION: Problems and Functions

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Coming in Spring, 1962, this new text is a managerially-oriented approach to the study of business administration as a totally integrated process. The authors have built their presentation around the organization and administration of the business enterprise in a complex society.

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Occupational Components of Educational Differences in Income ..... Otis Dudley Duncan
Failure of Enumerators To Make Entries of Zero: Errors in Recording Childless Cases in Population Censuses M. A. El-Badry
Note on the Missing Plot Procedure in a Randomized Block Design ..... Leroy Folks and Del Lon West
A Bivariate Extension of the Exponential Distribution ..... John E. Freund
Stepwise Least Squares: Residual Analysis and Specification Error ..... Arthur S. Goldberger
Statistical Methods for the Mover-Stayer Model ..... Leo A. Goodman
Gamma Distribution in Acceptance Sampling Based on Life Tests ..... Shanti S. Gupta and Phyllis A. Groll
On the Resolution of Statistical Hypotheses ..... Robert V. Hogg
A Simple Theoretical Approach to Cumulative Sum Control Charts ..... Norman L. Johnson
A Nomograph for Computing Partial Correlation Coefficients ..... Ruth W. Lees and Frederic M. Lord
Non-Additivity in Two-Way Analysis of Variance ..... John Mandel
The Statistical Analysis of Industry Structure: An Application to Food Industries ..... Lee E. Preston and Earl J. Bell
The Asymptotic Variances of Method of Moments Estimates of the Parameters of the Truncated Binomial and Negative Binomial Distributions ..... S. M. Shah
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The Quarterly Review of Economics and Business

VOL. 1 NOVEMBER 1961 NO. 4

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A Critique of Long-Range Forecasting . . . . . *V. Lewis Bassie*
The American Approach to Foreign Aid and the Thesis of Low Absorptive Capacity . . . . . *Sayre P. Schatz*
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Psychology and the Business Sciences . . . . . *James F. Engel*
The International Element in Basic Managerial Education: A Symposium
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Manuscripts and communications for the editors and business correspondence should be addressed to THE QUARTERLY REVIEW OF ECONOMICS AND BUSINESS, Box 658, Station A, Champaign, Illinois.

The American Economic Review

Volume LI SEPTEMBER 1961 Number 4

ARTICLES

A Theory of Economic Development . . . . . *Gustav Ranis and J. C. H. Fei*
Agriculture in Economic Development . . . . . *B. F. Johnston and J. W. Mellor*
Welfare Criteria for External Effects . . . . . *E. J. Mishan*
Stochastic Reserve Losses and Bank Credit . . . . . *Daniel Orr and W. J. Mellon*
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Contributors to Three Professional Journals . . . . . *P. A. Yotopoulos*

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Volume XXXIV OCTOBER 1961 Number 4

Index to Volume XXXIV
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The Future of Industrial Research . . . . . *Yale Brozen*
Capital Budgeting and the "Best" Tax Depreciation Method *Sidney Davidson and David Drake*
Recent Labor Disputes over "Restrictive" Practices and "Inflationary" Wage Increases *Irwin L. Herrnstadt and Benson Soffer*
The Bayesian Approach to Statistical Decision: An Exposition . . . . *Jack Hirshleifer*
Indexes of Retail Prices of New Cars—Consumer Price Index . . . *Allen F. Jung*
A Note on Provisional Estimates of the Gross National Product and Its Major Components *Peter E. de Janosi*
Book Reviews
Books Received
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2 new finance texts

Optimal Investment Decisions:
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by *Pierre Massé*, General Commissioner of Equipment and Productivity for France

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